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ABSTRACT

The second of two volumes, this report provides a brief description of a 1987 conference on distance education together with 21 papers that were presented in the informational sessions. The papers included in this volume are: (1) "Evaluation of Student Outcomes in Distance Education" (Charles Feasley); (2) "Principles of Effective Video Teleconferencing" (John Marder); (3) "Computer Instruction and Enhancements via Audio Teleconferencing" (Gary Meister); (4) "Implementation Handbook for GED on TV" (Maija Wimer and John Tucker); (5) "Education via Satellite: A Tri-National Perspective" (Willard Shaw); (6) "The Operation and Evaluation of the Instructional Television System at Arizona State University" (Norman Wagner); (7) "Evaluating Interactive Television: Methods, Findings and Issues" (Diane Morehouse); (8) "Evaluating Experiential Learning for Distance Learners" (Joan Byrne); (9) "Policy Questions for State and Regional Action To Support the Use of Information Technologies in Higher Education" (Richard Jonsen and Mollie McGill); (10) "Developing a Public Policy on Distance Learning and Information Technology: A Checklist of Issues" (Ann Kelley); (11) "Is There an Audience for Evaluation of Distance Education?" (Patricia Kovel-Jarboe); (12) "Evaluation of Teaching/Learning at a Distance" (Larry Lienau); (13) "Variables Affecting Adult Learning in a Distance Education Setting" (Robert Fellenz, Constance Blackwood, and Alan Seamons); (14) "The Influence of Teaching Style and Instructional Device Use on Student Satisfaction and Student Preference in Electronic Distance Educational Methods" (Alan Seamons); (15) "Change Triggered by Computer Technology: Its Implications for Faculty Development" (Barbara Inch); (16) "Prologue: A Skills Assessment Strategy for Distance Learning" (Thomas Dehner); (17) "New Student Orientation Workshop" (John Adams); (18) "Faculty Training for Teaching via Technology" (James Shaeffer and Carolyn O'Donnell); (19) "Multi-Media Approach to Statewide Teacher In-Service" (Donna Dixon and Kathleen Cullen); (20) "Teacher Training via UAA's (University of Alaska at Anchorage) Rural Special Education Program (Debra Veit); and (21) "A Model for Distance Learning: Combining Computer Telecommunications, Pre-Produced Videotapes,

On-Campus Instruction and Audio Teleconferencing" (Peter Balsamo). The last six papers are represented by summaries or abstracts. Tables and charts are included and most of the papers include references. (EW)

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Third Annual Conference on Teaching at a Distance:

Evaluation of Teaching/Learning at a Distance

Madison, Wisconsin
August 3-6, 1987

VOLUME II

INFORMATIONAL SESSION
PAPERS AND ABSTRACTS

Sponsored by:

The University of Wisconsin-Madison
School of Education
Department of Continuing and Vocational Education
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Third Annual Conference on Teaching at a Distance

EVALUATION OF TEACHING/LEARNING AT A DISTANCE

Madison, Wisconsin
August 3-6, 1987

The Third Annual Conference on Teaching at a Distance was held in Madison on August 3-6, 1987. The conference was attended by 225 participants from throughout the United States and Canada. Highlights of the program included four keynote addresses and forty-one informational sessions and application workshops. The sessions and workshops were divided into four strands: evaluation of distance teaching/learning, policy questions, support systems, and teaching strategies.

This two-volume report contains material presented at the conference. In Volume I are the four keynote addresses. In Volume II are twenty-one papers and abstracts presented in the informational sessions. The material provides a good overview of the kinds of issues, problems, solutions, and opportunities discussed at the conference.

Tape recordings of the keynote presentations are available for purchase. Audio tapes may be ordered from William Braun, Instructional Communications Systems, University of Wisconsin-Extension, Old Radio Hall, 975 Observatory Drive, Madison, WI 53706; (608) 262-4342.

An audiocassette and videotape package is available for the keynote address by Tony Bates. The videotape (1/2-inch VHS) contains the video material used by Dr. Bates in his presentation. The package can be ordered from Terry Gibson, Associate Professor, University of Wisconsin, 432 N. Lake Street, Madison, WI 53706; (608) 262-4877.

For your convenience, forms to order the keynote recordings are provided at the back of Volume I.

We hope the conference material will be useful to you.

Terry Gibson, Ph.D.
Associate Professor
University of Wisconsin-Madison

VOLUME II

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EVALUATION OF STUDENT OUTCOMES IN DISTANCE EDUCATION

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Revision of a paper presented at the Third Annual

Conference on Teaching at a Distance

August 5, 1987

Madison, Wisconsin

[1]The author gratefully acknowledges the valuable assistance of Teresa Hogan, Bev Dunham, Patty Cordell, and Jim Jordan in the preparation of this paper.

Evaluation of Student Outcomes in Distance Education

Abstract

This paper describes many of the ways in which student outcomes are evaluated within distance education programs. These multiple measures include self-assessment exercises, submitted assignments, proctored examinations, and (sometimes) face-to-face observations. In addition, survey results are reported that reflect the use of various evaluation methods by distance education programs in the U.S. and Canada. Based upon a review of published literature recommendations are offered within the paper to improve the development of objective test items, essay questions, institutional testing policies, affective measures, and performance tests. Finally, responsibilities are delineated for those who develop or who grade student work.

EVALUATION OF STUDENT OUTCOMES IN DISTANCE EDUCATION

Beginning at the End

From the beginning, literate man has been talking about evaluation. For example, Socrates said that a life that is unexamined, is not worth living. Still today, we are all subjected to various forms of evaluation.

The focus of this particular study is the evaluation of student outcomes in distance education. Such evaluation occurs in several ways within almost all distance education courses: submitted assignments, self-assessment questions, proctored examinations, and sometimes face-to-face observations. Contrary to the usual temporal sequence in which students encounter the different events of evaluation, I suggest that we follow the explanatory pattern used by the Department of Independent Study at Ohio University in its course developers and teachers handbook (Houdeck and Robinson, 1986): beginning at the end. Clearly if we look at the examination practices of distance education programs, we will learn a great deal about their evaluation of student outcomes.

Examination Practices

Although there have been few (if any) comprehensive surveys of testing practices within distance education programs, some snapshots are available to reveal certain activities. Within responses to a 1980 survey conducted of all 83 institutions listed in either the Directory of University Correspondence Courses (published by the Canadian Association for University Continuing Education) or the Guide to Independent Study Through Correspondence Instruction (published by the National University Extension

Association in the U.S.A.), one-third of the 57 responding institutions (15 from Canada and 42 from U.S.A.) reported having only one examination, including the final (Hegel 1981). The other two-thirds of the respondents utilize from one to four examinations per course. In somewhat less than half (42%) of the institutions, students assist in finding a local examination proctor. While one in every five institutions has a residential component, in some cases it is a recommended option. In 87 percent of the institutions students must complete all assignments to be eligible for a passing grade. In less than 10 percent of the institutions do students send assignments directly to instructors without monitoring by the central correspondence office. Only 16 percent of the institutions reported a standard number of assignments per course. About the same percentage (13%) indicated there was a policy of regular due dates such as once every week or month. Some institutions have maximum submission rates such as four per week. From my knowledge of actual practices within the larger group of U.S. universities, it appears that respondents marked the use of variable due dates inordinately often. This situation was caused by not giving a question response option of no due date (other than the end of the course enrollment period). Assignments were reported to contribute a value of 0 to 100 percent of the final course grade, usually varying by course.

In October 1982 the National Home Study Council (NHSC) received written survey responses from 51 institutions about their current educational practices. This group represents 85 percent of the total institutional membership of NHSC at the time of the survey. The survey responses are reported in considerable detail; for example, responses are shown in subgroups for military schools (4) and for six groupings of non-military schools according to enrollment size. This reporting by

subpopulations was prudent since the average new enrollment size for the four military schools was 201,700 students, in contrast to the large enrollment size grouping of non-military schools (also 4) having a new enrollment average of 26,390 students. Further, more than half the reporting institutions had enrollments of 2,500 or fewer students. When asked what kind of examination items their courses typically use, 75 percent of all institutions indicated objective, 16 percent marked subjective, 6 percent reported projects/artwork, and 4 percent recorded other types. The larger the institution the more likely that a typical exam item was objective. Size was also a differentiating variable with regard to mandatory resident training. While 18 percent of all institutions had such a requirement, none of the larger institutions (military or non-military) had such a requirement. On the other hand, larger schools were more likely to employ proctored exams. However, overall only 27 percent of all institutions reported the use of that procedure (National Home Study Council, 1983b).

Proctored Examinations

Of greatest importance to most programs in establishing and maintaining academic credibility is one or more proctored examinations. In general, for an exam proctor a student requests use of a specific non-family-related individual who is identified by name and job title; this person usually holds a responsible position that is concerned with educational needs. Frequently approved proctors include school principals, college counselors, testing directors, educational officers in the military services, business training staff, or officials of other distance education institutions. Once the student's designated individual is considered to hold an appropriate position to be approved as a proctor, a letter is sent

to that individual by title and institution to verify that the individual is willing to confirm in writing his or her administration of a specific test within a specific length of time with only specified aids (such as a calculator) available to the student. Upon receipt of the verified address and intent of a proctor, the examination is sent to the proctor with a specification of the exact conditions for administration and a form on which the proctor attests to the date and conditions of administration. Proctors are usually instructed to return the examination within two to three weeks if the student does not establish a time for taking the test. Many distance education programs have identified individuals around the country who continue to serve as regular proctors for many of their students. Such an ongoing arrangement saves students' time in searching for a proctor and in verifying the proctor's address.

Open-book Examinations

One testing approach that offers promise for use with adults who must learn at a distance is the open-book examination (Francis, 1982: p. 16). In addition to students' self-reports of reduced test anxiety and reduced need for memorizing factual material, there was also noted reduced cheating by students. Those exams that provided the smallest benefits to learners used multiple-choice formats to assess factual information while those exams that required students to prepare an analysis or synthesis of information were of the greatest value to students (Francis, 1982).

In a more comprehensive study, closed-book tests were compared with open-book tests and take-home tests with regard to student behavior and attitudes (Weber, McBee and Krebs, 1982). Sixty students were randomly assigned to one of three groups that took all three types of tests in a

different sequence during the same educational psychology course. Since each test had ten knowledge and ten application questions, it was possible to determine a knowledge score, an application score, and a total score for each test. Using a statistical procedure that shows the probability of similarity of item responses for pairs of students (Frary, Tideman and Watts, 1977), cheating was found to be no greater problem for take-home or open-book tests than for the closed-book test. While scores on the application items were not significantly different among testing modes, differences on total test scores and attitudes (about effort expended, cheating, anxiety, learning, and difficulty) were more favorable to the take-home and open-book exams, respectively, than the closed-book test. Finally, it was noted that both high- and low-ability students spent more time on the take-home test, which could explain higher achievement (although the simple correlations were weak). Regardless of the variety of testing items used by an institution, it is very important that clear expectations will be articulated for those people who write or grade exams.

Expectations for People Who Write The Exams

Two parallel forms (versions) of all exams are needed to enhance test security and to provide a quick revision if misunderstanding is observed in any question. An answer key should be provided by the author to increase consistent (reliable) scoring among different graders (for an essay question the main points are outlined). A cover sheet needs to specify course number, exam number and form, time limit, and allowed use of specific outside materials.

All questions should focus on key concepts covered in the course materials (avoiding questions that can be answered from general

knowledge). If at all possible, questions should be pilot-tested by actual students prior to use in the distance education course. Similar kinds of questions (e.g. matching) should be kept together on the test. This grouping reduces the time that students spend mentally "shifting" to handle a different kind of question thinking. However, the dependency of one question upon another question should be eliminated if at all possible to avoid giving too much weight to understanding one aspect of one concept.

Finally, it should be noted that it is good educational psychology to use the same type of questions in the lesson assignment that will be used on the examinations. (Houdek and Robinson, 1986:10)

Expectations for People Who Grade the Exams

In many instances all the students in a course are fortunate enough to have as a grader/tutor the same person who authored the course study guide in which the course requirements and standards are described. While this situation is conducive to informed and consistent grading, other situations are not as facilitative. For example, if the enrollments in a course increase very much, it becomes necessary to employ individuals as graders in addition to the course guide author. Because of a grader's retirement or assumption of a position at another institution, the replacement of the course author/grader may be needed. Finally, in larger distance education institutions, course development is executed by full-time staff members in a course team, none of whom serve subsequently as the grader or one of many graders for the course. To assist those graders, the course team develops detailed guidelines and instructions. In some cases they may provide examples of marked work from previous years (Rowntree, 1986).

However, research has shown that there is a problem of variation in standards between graders/tutors (Edwards and Williams, 1985). While there is evidence that such differences often even out or are diminished over the length of an entire course, some institutions have established a monitoring system. For example, at The Open University (U.K.), in the assignment handling office a sample of graded student assignments (on the way back to students) will be compared across tutors (The Open University, 1982). There may even be a "dummy" assignment sent to all tutors in a course to more closely measure consistency of marking. The results of such monitoring is sent in a report to the coordinating tutor for a course, who then communicates with all other tutors for the course. In addition a computer printout shows the ongoing grading pattern for all students served by each tutor.

In order to understand more thoroughly student attitudes about good teaching and marking by correspondence, distance education institutions have also surveyed students and faculty. For example, at The Open University (U.K.), in addition to a standard cover form for assignments on which tutors mark individual question scores, a total assignment grade, and analytical comments about the reasons for the grade, that institution continues to conduct extensive evaluation studies which are often published in the regular periodical Teaching at a Distance (which was recently superseded by Open Learning). In a recent article tutors were given considerable research-based advice on how to achieve fairness and consistency in grading, as well as how to create a dialogue with students that will help them improve their performances (Cole, Coats, & Lentell, 1986).

Prior to considering how to improve our course examination questions of various types, let us look briefly at another kind of evaluation which may also be undertaken at the end of a distance education program.

Graduate and Employer Surveys

One infrequently used method for measuring student outcomes is to survey graduates of distance education programs and their employers. One of the more regular users of this method is the National Home Study Council (1983a). For example, in 1983 responses were collected from 40 percent of 534 graduates of academic degree programs. Seventy-three percent of those respondents said that their goals had been achieved since earning their degree, while 97 percent felt their degree programs provided the knowledge, skills and education they were seeking. In addition, 96 percent said they were satisfied with their school's programs and services. After securing permission from individual graduates, the 40 employer supervisors who were surveyed said unanimously that the home study degree graduate performed better on the job as a result of the degree and compared favorably with other employees with resident degrees. In addition, all supervisors indicated that they (a) would hire another person with a home study degree and (b) would encourage others to earn homes study degrees. It is now time for us to look at how to improve specific kinds of measurement.

The Preparation and Use of Objective Tests

To distinguish between good, average and poor students, questions should range from relatively easy to relatively difficult. They should be arranged in an order of increasing difficulty; this way the students will not be put off by tough questions at the beginning of a test. Questions of

the same type should be grouped together if possible. This minimizes reacquaintance with directions.

Use of a blueprint or grid indicating subject matter divisions and desired abilities is helpful in deciding what to cover in a question.

Insert Figure 1 about here

The amount of space or time devoted to a topic in the textbook employed in the course, or scattered throughout the learning activities of the course, should parallel the weightings reflected in the test blueprint.

The entire draft of a test should be set aside for a day or so for the faculty member's final review before it goes to the press. The review of one's test by one's colleagues is also a helpful mechanism.

Analyzing Objective Tests[1]

In the analysis of tests several indexes are important. First, it is desirable to know what proportion of the total group answered each question incorrectly. This index of difficulty is useful in balancing a test so as to distinguish between the varying levels of student achievement. A test composed entirely of very difficult questions would separate only the very able students from all the rest. However, difficulty alone does not tell the teacher all that he can know about the questions of the test. It is also desirable to know whether each individual question distinguishes or discriminates between students who did well on the complete test and those who did poorly. If a particular question was answered successfully by most of the low-performing students but by few of the high, it may be inferred that the question worked against the purpose of the test. A

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[1]Adapted from Board of Examiners, "The Writing of Essay Questions" (East Lansing: Michigan State University, 1956).

Figure 1. Objective Test Blueprint

Objectives / Subject Matter	Colonial Period	Revolutionary and Constitutional Period	The Westward Movement	Eve of the Civil War	The War Between The States	Total
Knowledge	4	6	2	4	4	20
Understanding	4	8	4	2	6	24
Application	2	6	6	4	8	26
Total	10	20	12	10	18	70

simple but indicative index of discrimination for each question is provided by dividing the group of papers into an upper and a lower one-third (or one-half, if the number of papers is small) according to total scores. The difference between the proportion of students in each group answering the question correctly (high group minus low group proportion) is the index. More refined procedures for studying the behavior of individual test questions are available, but the classroom teacher will rarely find time to use them.

In the case of multiple-choice tests, it is frequently informative for the teacher to make a study of the incorrect alternatives which students choose. From the educational standpoint such study may uncover evidence of common misinformation on the part of students and thereby suggest revision of a teaching procedure. From the testing standpoint, incorrect alternatives which attract no students are contributing nothing to the test and should probably be rewritten or replaced if the question is to be used again.

There are two other concepts which should be of interest to teachers in studying the results of an objective test. One of these is called validity and refers to the extent to which a test measures what it is supposed to measure. There are several ways of studying validity. The most common method involves studying questions to see if they appear to pose significant and relevant problems. This "face" or "logical" validity can be verified by comparing students' test performance with other criteria. One such criterion is provided by their performance on previous tests. Obviously, there will and should be some differences because some students will have studied more for one test than for another. However, if there is a marked discrepancy, this would suggest further study. It might

suggest changing the percentages used in converting scores to grades. It might even suggest that the results of a particular test be omitted in computing final grades. It might suggest ways of improving the next examination.

The second concept is called reliability and refers to the consistency with which the test would separate students from one time to another or to the consistency of student performance on two tests covering the same materials. Obviously if a test gave one ranking of students one day and a decidedly different ranking of the same students the next, the test would not be an effective device on which to base appraisals. By the same token, if the teacher had available two equivalent forms of the same test and the two gave widely divergent scores for the same group of students, the test would have to be deemed ineffective. Again, the specific techniques available for estimating reliability are too time consuming to be useful to most classroom teachers. However, a good "rule of thumb" is that if the test yields a range of scores that is large in relation to the number of questions in the test, the teacher can be fairly certain that the test possesses an adequate degree of reliability.

It is probably necessary for us to get more precise in describing a good test. To begin with, since the best test is one composed of items having a medium level of difficulty and a narrow range of difficulty, Ebel recommends a difficulty index of .4 to .7 (1971). The temptation is to recommend an average item difficulty of about .50. However, many advise a test difficulty of an easier level than that. With a five option multiple-choice test the chance probability of success is .20. Taking the difficulty level midway between .20 and 1.0 would result in an index of .60. In a test comprised of four option choices the chance probability of success would be

.25 with the average item difficulty somewhat easier than .63. When the test content is very homogeneous (item intercorrelations are high) or the group tested is very heterogeneous, a wider spread of difficulty may be called for (Tinkelman, 1971).

For a test designed for individual diagnosis the test planner may wish to see a reliability of at least .90. For group survey purposes he may tolerate a reliability of .75 or .80. At the same time the correlation of predictive validity for the test should be at least .4.

The time allowance for a test should enable about 75 to 90 percent of the examinees to finish. It has been estimated that the average high school student should be able to answer two true-false items, one multiple-choice item, or one short-answer item per minute of testing time (Grunlund, 1971:240). To pull together many general standards for testing, I have also prepared a sample institutional testing policy.

Sample Testing Policy

Validity. A test developer should provide evidence of the validity (the fact that the test measures what it says it measures) of a test. Several kinds of evidence may be employed. There are criterion-related validities when one intends to deduce from a test score an individual's probable standing on some other variable. Predictive validity refers to the extent to which a test score will predict a performance which occurs later than the taking of the test. Concurrent validity refers to the extent to which the test score is said to relate to another variable at the same point in time, which has a known and acceptable prediction of the desired later behavior. Content validity shows to what extent the behaviors demonstrated in the testing constitute a representative sample of the entire scope of behavior

sought. Local norms or passing standards should be developed as soon as possible.

Reliability. The test manual or test developer should show evidence of reliability (how consistent performance would be on the test over time). Evidence of reliability may include estimates of the standard error of measurement and one of several reliability coefficients:

1) an alternate form reliability on parallel forms of the test;
2) a split half or inter-item reliability measurement on the same administration of a given test;
3) a test retest reliability when a student is given the same form of a test twice over a period of time sufficiently separated to minimize the effect of familiarity.

Test Item Quality. Faculty members are encouraged to use item statistics such as item difficulty (how many students answer a given item correctly) and item discrimination (how those students who pass the whole test do on this one item), as well as indicators of test reliability and validity, to improve the effectiveness and dependability of tests they use.

Criterion-Referenced Measurement. The calculation of the reliability of any test is dependent upon the variability of performance of students taking that test. Criterionreferenced instruments are designed to minimize the variability of student achievement on any given test administration. Therefore, to derive an adequate measure of reliability for criterion-referenced tests one should combine the pre and post administrations of any test. The content validity of the test may be examined by the test administrator's faculty colleagues and program advisory committees, as well as former and present students. Attention should be given to the content areas to be covered and the complexity of skills desired within each.

Revisions. Tests should be reviewed every 2 to 3 years (or sooner if dictated by circumstances such as extensive negative feedback about the test from faculty and students) to determine the need for content revision or renorming because of a changing student population. The comparability of the old and new tests should be determined and reported to potential test administrators.

Test Interpretation. Test results should be given to the test taker at a time when it is possible for a counselor or faculty member to answer questions the test taker may have. At such a time the test administrator may also point out limitations on the use of the test results.

Administration. For the use of other faculty members who might want to administer the test or to insure the same chance for all the students of the test developer, a description of testing conditions to be duplicated should be prepared. To be discussed would be what instructions (written or oral) to give to students prior to students beginning the test, the time allowed for the test, any corrections for guessing, whether student questions during the test can be answered, how to handle "cheating," etc.

If the test is to be timed, a backup timing device should be employed. An effort should be made to provide a testing location that is as free of distractions as possible.

Testing Security. Unused test booklets and fully completed answer sheets should be stored in a locked filing cabinet. Faculty members will be given information about the performance of students in their courses on academic achievement and aptitude tests upon request. The results of vocational interest tests and personality tests will be given to counselors at the college upon the written authorization of the test taker. Actual test results should be retained for a period of three years.

Measurement of Attitudes

Now, let's move to two areas of testing that receive far less attention than the types of tests we have talked about so far. These areas focus on the measurement of attitudes and skills (or performances).

Although particular attitudes are not usually required for graduation from instructional programs, attitudes can affect a student's learning and performance. Thus, the measurement of attitudes may be needed to diagnose a student's problems and to prescribe alternate learning paths. In general two methods are used to measure student attitudes: 1) self reports by individual students and 2) observations of the student by others. Self-reports are obtained through either interviews or questionnaires. Since interviewers must be carefully trained and interviews may not be a very efficient means of collecting information, questionnaires are more often used.

The two most commonly employed self-report scales are the rating scale and pair comparisons. The precision of a rating scale usually increases with the number of scale points used (from good to bad or reverse), although the most practical number of scale points seems to be five, which is used in the Likert scale (see Table 1).

The pair comparison technique is effective when measuring the strength of student preferences between objects, activities, or curricular topics. The Osgood Semantic Differential is a primary example (see Table 2).

The assumption in making observations is that students will seek out something they view positively and avoid what they view negatively. Accordingly, observations could be made of library book checkouts, audiovisual usage, length of papers submitted, number of assignments completed on time, etc. To examine in greater detail measures of attitude review the excellent resource prepared by Severy (1974).

TABLE 1

LIKERT SCALE

A LIKERT SCALE IS A FIVE-POINT SCALE IN WHICH THE INTERVAL BETWEEN EACH POINT ON THE SCALE IS ASSUMED TO BE EQUAL. IT IS ACTUALLY CALLED AN EQUAL-APPEARING INTERVAL SCALE. THIS SCALE IS USED TO REGISTER THE EXTENT OF AGREEMENT OR DISAGREEMENT WITH A PARTICULAR STATEMENT OF AN ATTITUDE, BELIEF, OR JUDGMENT. AN EXAMPLE APPEARS BELOW.

THE U.S.A. SHOULD CONTINUE TO BELONG TO UNESCO

STRONGLY AGREE | AGREE | UNDECIDED | DISAGREE | STRONGLY DISAGREE

TABLE 2

UNESCO

STRONG	____ (7) :	____ (6) :	____ (5) :	____ (4) :	____ (3) :	____ (2) :	____ (1)* :	WEAK
BAD	____ :	____ :	____ :	____ :	____ :	____ :	____ :	GOOD
FAST	____ :	____ :	____ :	____ :	____ :	____ :	____ :	SLOW
PASSIVE	____ :	____ :	____ :	____ :	____ :	____ :	____ :	ACTIVE
PLEASANT	____ :	____ :	____ :	____ :	____ :	____ :	____ :	UNPLEASANT
SMALL	____ :	____ :	____ :	____ :	____ :	____ :	____ :	LARGE
HEAVY	____ :	____ :	____ :	____ :	____ :	____ :	____ :	LIGHT
DULL	____ :	____ :	____ :	____ :	____ :	____ :	____ :	SHARP
CLEAN	____ :	____ :	____ :	____ :	____ :	____ :	____ :	DIRTY

**These scoring numbers do not appear on the actual copy of the scale.*

OSGOOD SEMANTIC DIFFERENTIAL

Measuring Skills and Performances

Increasingly, there has been an effort to use direct methods (rather than indirect) to measure a performance or skill. For example, rather than only measuring a cognitive understanding of how to operate an automobile, most governments also require a road test performance. Common methods of making judgments about performances or skills include observations, rating scales, and checklists. During an observation one makes note of the presence or absence of an observable behavior. For example, the driver either did or did not use a seat belt. In a rating scale there are numerical descriptions of behavior. The observer views a performance or product and records a numerical judgment on a rating scale. For example, a 10 out of 10 points might be given if the driver had no incorrect gear shifts.

In a checklist there are sequences of related behavior that can be observed on a step by step basis. For example, in parallel parking a sequence of steps might include signaling, stopping the correct distance in front of the parking space, backing into the space at an appropriate angle, and straightening out the car not too far from the curb or too close to other cars. One important way to design a checklist performance test is through a task analysis. Another necessary step in developing performance testing is the preparation of instructions for both performers and observers, as well as any actual rating and scoring forms. Several authors, such as Boyd and Schimberg (1971), have numerous tips for improving the scoring of performance tests. Another detailed discussion of the characteristics of various types of simulation/situation tests has been provided by Fitzpatrick and Morrison (1971). In concluding our considerations of performance testing, I want to alert you to the recent

reference book edited by Berk (1986) which covers many of the issues raised here.

Continuous Assessment

The utilization of assessments of student learning prior to the course final examination is unusual enough within many countries' traditional educational systems that such early course evaluations for distance education are given the special designation "continuous assessment." Both faculty graded student submissions and self-assessment are used. The formal marking and grading of submitted assignments throughout courses yields results that are informative to both students and faculty (Connors, 1981). Students find out what objectives they have mastered and what areas need further study. Faculty members are alerted to situations in which students need additional instruction and where some course materials may need revising.

In the preparation of specific feedback to student responses, Store and Armstrong (1981) urge that certain basic assumptions about feedback (derived from Gibb, 1961) must be kept in mind. Good feedback loops are an integral part of course design, providing immediacy, regularity, explanatory rather than judgmental comments, conciseness and clarity. In addition, feedback is a people process and as such, efforts must be made to reduce defensiveness by understanding the different behaviors of defensive versus supportive climates:

1. evaluation versus description,
2. control versus problem orientation,
3. strategy versus spontaneity,
4. neutrality versus empathy,
5. superiority versus equality, and
6. certainty versus provisionalism.

More specific recommendations have also been made for the varied use of written, oral, and self-assessments including examples of good pieces of work, feedback on drafts and outlines, and providing information to students on the distribution of scores (Store and Armstrong, 1981). More recently, Rowntree (1986) offered a helpful list of ways of teaching through feedback comments:

- Draw the learners' attention to facts they have overlooked or misinterpreted,
- Suggest alternative explanations or interpretations,
- Guide learners on the handling of evidence,
- Show how to use quotations from texts,
- Draw attention to gaps in the learners' reasoning,
- Suggest how learners might present their ideas more effectively,
- Offer new data that will help learners extend their understanding,
- Ask for further explanation of muddled answers,
- Demonstrate short-cuts in problem-solving,
- Draw attention to how a piece of work might have been improved (e.g., in content, balance or logic),
- Point out relationships between the learners' present work and their earlier work,
- Commend the learners for any unexpected insights, special efforts or improvement in skills.

(Rowntree, 1986, p. 328)

On a more personal level, Estabrooke (1981) offered excellent advice on comments that motivate students toward better work including:

Use of first names

Reference to pride: "You can be proud you..."

Instructor's faith: "I believe you can keep up the fine work."

Instructor's appreciation: "Thanks, Jean. You've brightened my day."

Instructor's experience: "During my 10 years of teaching, I have not seen a better paper."

Instructor's helpfulness: "I'm here to help you in any way I can."

Also promising for continuous assessment is the utilization of multiple mastery tests which students must complete at certain high levels of achievement prior to beginning work on subsequent instructional units. As evidence, a recent meta-analysis of 49 comparative studies at both precollege and college levels showed that mastery testing generally has positive effects (0.54 standard deviations) on final exam performance (Kulik and Kulik, 1987). This is an increase from the 50th to the 71st percentile. Mastery effects were more pronounced on the less able students. However, for all students the size of effect in any single study depends on both the stringency of the mastery criterion used (e.g., 80 percent versus 90 percent) and the degree of experimental control employed in the study.

Distance educators in the military have made efforts to look carefully at the conventional wisdom that implies "all feedback is good and the sooner the better." Attention has been focused on the Delayed-Retention Effect (DRE), which in its simplest form states that during delayed feedback wrong responses are forgotten, so there is less interference of wrong with the correct answer supplied in the feedback (Diehl 1982; Franus and Wade 1982; Sturgis 1978). While most of the promising existing research has usually been done in residential schools with delays of one or two days, distance education programs can generally provide either immediate feedback via computer or offer mailed feedback that usually takes one week to three weeks to return to students. Contrary to the concern

about DRE, Andrews and Strain (1985) found no significant differences in course completion rates by students using off-line computer generated/mailed feedback versus those students who received immediate on-line feedback to their computers.

Self-Assessment and Self-Remediation Strategies

To gain an excellent overview of the theory and practice of self-assessment and self-remediation strategies I urge the reader to consider at length the relatively recent article by Gale (1984). In respect for the usefulness of her discussion I will summarize her article's main points to stimulate further interest by readers in this area of research. To begin, Gale identified and explained a number of purposes for self-assessment and self-remediation:

1. overcoming isolation (there are no fellow students or teachers present to clarify, correct or motivate the students);
2. activating learning (increases depth of text processing);
3. controlling the type or content of learning achieved;
4. diagnosing and remediating (seeing what is right and wrong, then changing one's learning to correct errors);
5. establishing student responsibility for learning (there is debate about the extent to which the teacher is still in control); and
6. reducing anxiety (about forthcoming examinations).

In developing such self-assessment and self-remediation strategies, decisions are needed about the location of such exercises, the type of question and response wanted, and the provision of feedback and remedial material. In discussing these structural features, Gale cites many prior studies. For example, Duchastel and Whitehead (1980) were reported to have given details of a variety of ways for distributing self-assessment

questions within different sections of one Open University course. Such adjunct questions when located after instruction have been shown to have the greatest process and content benefits for learners, including more adjacent topic understanding (Rothkopf 1968, 1971; Hamilton, 1985). While this is clearly the case for lower-level cognitive questions, the best placement of higher-order questions is not revealed by present research, although their use anywhere is beneficial (Marland and Store 1982). In contrast, students may be allowed to decide for themselves when and how self-assessment should occur (Lockwood, 1984; Zimmer, 1984; Dowie and Lefrere 1984).

Encouraging students to use available opportunities for self-assessment is said to involve issues of relevance, clarity, content, utility, and integration of the exercises themselves (Gale, 1979). Nathenson (1979) recommends that each self-assessment question should include a rationale for answering it (e.g., this self-assessment question is important because it tests an objective that will be assessed at a later time).

With regard to types of self-assessment exercises, Lockwood (1978) was reported to have provided ten examples from an Open University course, with required responses including short notes, analysis of theory, summaries, comparison of rival interpretations, classifying, and completing checklists. Also noted was the report by Wittlich and Schuller (1973) of many uses of audiotape and videotape for self-assessment in areas such as music, languages, and athletics (Gale, 1984, pp. 107-108). However, while such findings were usually derived from laboratory experiments, other studies on actual course experiences (Nathenson, 1979; Henderson, 1977) reveal the greater use that students make of fixed response self-assessment questions rather than open-ended inquiries.

Advantages and disadvantages can be found in the various location in which answers are given to students for such self-assessments. Answers given at the back of the book seemed to work well with questions requiring long work (such as calculations) that diminish the possibility of remembering the answer to the next question. But frequent checking of answers in the back of the book was found to be irritating. Answers can also be shown out of primary sequence in some randomly designated order or in groupings of questions of the same number regardless of chapter. However, such methods are thought to be difficult to revise. Answers at the bottom of the same text page (upside down or right side up) are thought to be less irritating than those in the back of the book but more revealing of subsequent answers. The use of a scrambled location for an answer, employed in branching programmed texts, was thought to be irritating, as well as hard to revise. In medical education, it is common to cover answers shown in one color with the ink of another color that is removed with a transparent mask overlay, which is a method costly to produce (Stoane and Stoane, 1982).

The latent image presenting of answers next to questions (either by spirit duplicating or offset printing) remains invisible until treated with a developing pen; this process was thought to be quite appropriate for distance learning although copies may take longer to produce and be somewhat more costly. With this method it is possible to have a permanent record of how many options a student chose before selecting the correct answer. Another variation is a liquid crystals method (such as found in some digital thermometers) that has been employed in Japan; while the materials are reusable, a record of student responses is not maintained (Stoane and Stoane, 1982). Scratch-off printing (as used in instant lottery tickets) must be commercially printed. It is also possible to give answers to stu-

dents on audiotape, although it is possible to lose the sequence of answers unless they are identified. Finally, microcomputers can be used as providers of feedback, but difficulties arise in the necessity for students to go to a learning center to use them.

On the matter of feedback Crooks, et al (1979) were reported to have recommended that both the correct answer and other possible answers be discussed, or a checklist of important points be provided. The location of feedback has been noted by Anderson, et al (1972) as sometimes allowing students to access a correct answer before composing a response and, thereby, short-circuiting instruction. Also described was McGuire's (1972) example of an individualized remedial program in which a feedback sheet contains question numbers grouped together into columns and rows, which are each identified by subject area, level of the grouped questions, and an appropriate remedial prescription. The student is supposed to follow the recommended remediation whenever they have answered incorrectly more than one of the closed-ended questions in a given column and row (Gale, 1984, pp. 110-111).

Recently Meed (1987) may have brought to our attention an entirely new level of self-assessment question, which he calls the self-involvement question since it is designed to stimulate active learning. In addition to giving several examples from the National Extension College's most successfully-completed course, Preparing for Social Science, Meed also lists some general strategies for such questions (p. 22):

- deciding what they want to achieve and how to go about it (so linking closely with the benefits they are looking for)
- thinking about what they are about to read
- drawing on their own experience
- reflecting on what they have read

- trying things out

- talking to other people.

Portfolio Evaluation

Within the past decade more and more institutions have become willing to use a wide variety of measurement methods to evaluate the prior learning that students have accumulated. In addition to standardized examinations and performance tests like those described already, institutions have accepted portfolios of documentation concerning prior accomplishments. Included in these portfolios are items such as statements from former supervisors, copies of reports (and other products) that were done, and descriptions of processes that were employed to resolve certain problem situations. The publications of the Council for Adult and Experiential Learning (CAEL) are excellent in describing in detail what various institutions have done for portfolio evaluation of prior learning. Both Indiana University and Ohio University offer portfolio evaluation courses by Independent Study.

Summary

This paper has reviewed many of the ways in which student outcomes are evaluated within distance education programs. It was noted that during enrollment such multiple measures may include submitted assignments, self-assessment exercises, proctored examinations, and sometimes face-to-face observations.

This paper has summarized existing practices in using objective and subjective evaluations. In greater detail specific types of questions are discussed in Appendix A. At the same time that this paper has provided recommendations for improving current practices and policies, the reader has also been directed to many other references for further assistance.

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APPENDIX A[1]

Multiple Choice Questions: Examples

I. The Correct-Answer variety

Mark the correct response.

1. What wire size would you recommend for a circuit with 21 volts and 3 ohms resistance?

   a. AWG - 14 wire

   b. AWG - 10 wire

   c. AWG - 16 wire

   d. AWG - 12 wire

II. The Best-Answer variety

Select the best answer.

1. What is the major goal of psychotherapy?

   a. to achieve a healthy society

   b. maintain the status quo

   c. relieve the client's guilty feelings

   d. aid the client in reaching individual goals

III. The Incomplete Statement variety

Select the correct answer.

1. Mount Kilimanjaro is located in:

   a. Australia

   b. Tanganyika

   c. Brazil

   d. Nepal

---

[1]based on question types identified by Wesman (1971)

IV. The Multiple Response item

Choose those titles that are considered fictional stories.

a. All the President's Men

b. Walden Two

c. Animal Farm

d. Walden

V. The Negative variety

1. Which of the following is <u>not</u> a sailing term?

a. to beat

b. to jimmy

c. to run

d. to reach

e. to jibe

Multiple-Choice Questions: Recommendations

1. Use either a direct question or an incomplete statement as the item (beginning test writers seem to produce better items when they use direct questions rather than the incomplete statement approach).
2. Reduce the length of answer choices by including as much relevant (but needed) information as possible in the question stem.
3. Make sure there is only one correct or clearly best answer.
4. Avoid answer choices that are not grammatically consistent with the question stem (e.g., Abraham Lincoln is considered the best U.S. president because he
   a) promoted greater human rights.
   b) a lawyer who understood legal complications.
   c) a successful foreign policy maker).
5. Be sparing with "all (or none) of the above" and especially with such forms as "Both A and B above," which attract attention to the form of the question at the expense of its content. These combined forms create multiple-multiple choices that might be used fruitfully in writing assignments since they are open book, but that leads to scoring problems in conventional test situations (Lawson, 1983:16).
6. Avoid a negatively-stated item stem if possible.
7. Avoid including unneeded words.
8. Avoid using one favored position in assembling a series of questions.
9. Avoid providing clues by inadvertently writing related items next to each other.

Matching Questions: Examples

I. Simple Matching Variety

In the left column write the letter of the author for that book.

____ 1. Sea Wolf	a. Lew Wallace
____ 2. Gulliver's Travels	b. Charles Dickens
____ 3. Ben Hur	c. Jack London
	d. Jonathan Swift
	e. Samuel Butler

II. Classification of Statements

Write the letter of the correct beginning of each statement.

a. Giving a patient saline

b. Giving a patient morphine

c. Giving a patient benzadrine

____ 1. may aid in compensation for exhaustion.

____ 2. may be physically addicting.

____ 3. may be helpful in reducing pain.

____ 4. may counter dehydration.

Matching Questions: Recommendations

1. Use a relatively short list of responses; long lists require too much effort for the number of responses the students will make.
2. Provide instructions which clearly indicate the basis for matching.
3. Arrange the choices in some logical sequence (e.g. alphabetical order). This reduces the response time.
4. Write all options in each column so that they are grammatically compatible with the other choices.
5. Offer more answer options than correct matches so that students do not get a correct answer because it was the only answer left.

Alternate-Choice Questions: Examples

I. The True-False Variety

1. Measured amounts of 100% gasoline are fed directly into the piston chamber in an internal combustion engine. T F

II. The Right-Wrong Variety

1. $(6+X)(X-4) = 6(X-4) + X(X-4)$ R W

III. The Cluster Variety

A Kalamazoo police officer:

1. may apply handcuffs before advising a client of his/her rights T F
2. may not enter a person's home without a search warrant T F
3. makes an average salary in Michigan of $20,000-$22,000 T F

IV. The Yes-No Variety

1. The first step taken to test an ignition coil with a coil tester is to clip one test lead to the adaptor. YES NO

Alternate-Choice Questions: Recommendations

1. Since there is always the 50-50 chance of answering such items correctly by mere guessing, true-false questions should be used as infrequently as possible.
2. True-False items should not be used to measure higher order cognitive outcomes (e.g., evaluation) because it is so difficult to make a statement which is absolutely true or universally false.
3. Avoid the use of long and involved statements with many qualifying phrases because a true statement is usually identifiable for that reason.
4. Avoid the use of sentences taken directly from text; such questions are usually context dependent or trivial.
5. Use negatives sparingly since they make the test more difficult than the measured information is worth; if negatives must be used, underline or capitalize them.
6. Avoid absolutes such as "always" or "none," which suggest that the answer is false.
7. Avoid qualifiers such as "generally" or "often," which suggest the answer is true.
8. All true-false questions should measure single ideas, not compound ones.

Context-Dependent Questions: Types

Also known as a situation or problem item. It consists of a narrative or descriptive passage or illustration upon which two or more items are based (Loftus, 1980).

1. The pictorial form (charts, tables, maps)
2. The interlinear exercise (asking a student to find defective segments)
3. An interpretive test exercise

Context-Dependent Questions: Characteristics

1. provides an effective setting to ask meaningful questions on complex topics
2. requires both a general ability to interpret and a specific background of details
3. difficult to construct
4. time consuming to administer

(Wesman 1971)

Short Answer Questions: Examples

I. The Question variety

1. Who was Richard Nixon's running mate in the 1972 Presidential election?

_____

2. The planet Saturn has how many moons?

_____

II. The Completion variety

1. One mile is equal to _____ feet.
2. The grammatical term for the word used to signify any object of which we speak or write is called a(n)

_____

III. The Identification or Association variety

After each of the following book titles write the author's last name.

1. One Flew Over the Cuckoo's Nest _____
2. The Adventures of Don Juan _____
3. In Watermelon Sugar _____
4. Breakfast of Champions _____

Short Answer Questions: Recommendations

1. The majority of short answer items measure no higher level of mental process than memory for facts.
2. phrase short answer items to insure that the same correct response will be made by all those answering.
3. Allow space for student's answers and arrange the spaces for convenience in scoring.
4. In computational problems, specify the degree of precision expected.

Essay Questions: Suggested Improvements

1. Provide students with the following information:
   - desired length of the answer (e.g., three paragraphs),
   - general form of the response (e.g., coherent paragraphs comprised of grammatically correct sentences that are double-spaced typewritten with one inch margins on all sides of the paper),
   - content to be covered (e.g., discuss three causes for the U.S. Civil War that were mentioned in chapters 3-5 of your textbook),
   - value of this question within the overall text (e.g., this question is worth 50 points, which is one-third the total points for the test),
   - any time constraints (e.g., you will have two hours to complete two essay questions and 20 multiple-choice questions).
2. Try to give students a choice among several equivalent essay questions (e.g., answer any two of the following three questions).
3. While essay questions are easy to construct, they are hard to grade.
4. If more than one person grades a particular question, there should be an interrater agreement 80% of the time. Interrater reliabilities can be improved by providing model answers with which raters practice grading for consistency.
5. Essay questions may be measures of writing ability as much as tests of content understanding.
6. In relation to the response time needed, essay questions may focus on a rather small amount of content.
7. Yet, essay questions can measure well higher level cognitive outcomes.

PRINCIPLES OF EFFECTIVE VIDEO TELECONFERENCING - WHAT TO DO AND WHAT TO AVOID

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PRINCIPLES OF EFFECTIVE VIDEO TELECONFERENCING -

WHAT TO DO AND WHAT TO AVOID

Introduction

The Carnegie Commission on Higher Education has predicted that by the year 2000 more than 80 percent of off-campus instruction and 10 to 20 percent of on-campus instruction will use some type of information technology (Wiesner, 1983). Such changes will have far-reaching effects on students, faculty, administrators and may challenge the views many have about the essence of learning. Throughout the world, satellites have been used in distance learning through video teleconferencing.

In the 1980s distance learning through the video teleconference (VT) using the communications satellite has allowed people in disparate locations to see and hear each other through electronic voice and picture transmitted over any distance. Some have argued that the VT has aided in a faster, less expensive means of communication while others have wondered about reported problems with the medium.

In the 1970s Marshall McLuhan argued that the "medium is the message" (McLuhan, 1972) and that technology actually became a new, electronic message. Thus, to understand the VT is to understand a medium that is more than the sum of its parts--just as television is more than radio plus pictures.

VTs have been marketed for the business world while, at the same time, broadcast from a university campus (often

through university offices of continuing education). One major study of nine diverse, autonomous distance universities concluded that such institutions are more advantageous to students' external needs and exhibit more efficient administration for the number of enrollments (Rumble & Keegan, 1982). Still, little data exists about experiences with the medium.

Literature Review

Direct Broadcast (DB) Satellites allow broadcasting directly from space and lower overall cost as expensive ground stations are not required. By the end of the 1980s, DB satellites will shift to the Ku and other bands with the higher frequencies (11.7 to 12.2 GHz, for example) to result in stronger signals.

Two basic versions of video teleconferencing include (1) point-multipoint video teleconferencing and (2) fully interactive two-way video that allows participants in two locations to see and hear one another. While "(1)" is essentially a closed circuit television broadcast that allows an originating site to send a video and audio signal to any number of remote locations, "(2)" facilitates relatively small group communication (Ruchinskas and Svenning, 1984). Two basic formats for fully interactive two-way video are continuous presence, which provides a view of all participants in the

conference room, and voice-switched, which focuses primarily on the person speaking (Ruchinskas & Svenning, 1984).

A significant study of organizational teleconferencing was done by Felipe Korzenny and Connie Bauer (1981) at Michigan State University. The researchers tested the theory of propinquity, defined as the psychological distance between communicators or the degree of perceived closeness of another person or group. With teleconferencing, propinquity is the perceived closeness in terms of psychological presence and participation potential. Bandwidth was defined as the information transmission capacity of the available sensory channels (visual, auditory, tactile, gustatory, and olfactory) for verbal and nonverbal communication. Face-to-face conferences have all five channels available (a wide bandwidth) whereas video teleconferencing had only two channels--visual and auditory and was defined as having a medium bandwidth. Audio teleconferences had only one channel, or a narrow bandwidth.

The researchers theorized that increased bandwidth would increase psychological propinquity and communication satisfaction. Contrary to expectations, the bandwidth of the communication channel, the levels of communication, and the skills of the participants did not have an impact on psychological propinquity. Korzenny and Bauer cite that the most interesting result of the study had to do with feedback in

predicting psychological propinquity and communication satisfaction. Thus, the important factor for any form of teleconferencing, is really two-way communication.

Eric Fredin, Indiana University, found that two-way cable television systems (systems that allowed feedback) produced a significantly wider diversity of ideas. One-way systems that did not allow a viewer to ask questions or receive feedback failed to produce varying solutions to problems (Fredin, 1983). Lazarsfeld and Stanton (cited in Marder, 1977) found that radio had a tremendous influence on learning current events when combined with the feedback of classroom instruction.

Purpose of the Study

The purpose of this study was to:

(1) survey persons in the United States who have produced or been involved with video teleconferences

(2) measure attitudes of university administrators about university oriented video teleconferencing

(3) suggest ways to improve video teleconferencing based upon data and the reported experiences of others

Statement of the Problem

Many articles written about the "best" methods of video teleconferencing have relied on the experiences of a single individual or examined a single VT. Although examinations of specific VTs are beneficial, generalizations about the "whole" of video teleconferencing are impossible without data on a national level. The problem has been a lack of data gathered from a more representative sample of those involved in VTs.

Methodology

Two questionnaires, were mailed in March and May 1985 to selected groups involved in video teleconferencing in the United States. The respondents were selected based on the assumption that anyone involved in video teleconferencing in higher education or business (except vendors because of possible bias) will have gained valuable information about video teleconferencing. The "User Questionnaire," measured responses and variance among persons involved with video teleconferencing and the "Administrator Questionnaire" was sent to persons who control budgets for video teleconferences such as college/university presidents and administrators.

After questionnaire pre-testing, all organizations known to have video teleconferenced (except vendors) with a listing in the 1984-1985 Corporation for Public Broadcasting Directory (110 organizations/agencies), the University of Wisconsin's

Teleconferencing Directory, 1985 (58, United States; 11, Canada; 1, Australia; 1, Japan; 1, Sweden; 2, England) and the membership list of the National University Teleconference Network (98 colleges/universities), were sent questionnaires. Thus, 564 questionnaires were mailed to 282 organizations.

Findings of the Study

The Administrator Questionnaires (176 [62.4%] returned) and User Questionnaires (230 [81.6%] returned) represented the United States in reasonable proportion to the regional population. The geographical regional organization used for this comparison followed a typology suggested by Sales and Marketing Management magazine (Kern, 1985).

Video teleconferencing, defined as a means of permitting groups and individuals in disparate locations to conduct meetings together and hear and see each other through electronic means, was found to change dimensions with the type of institution or organization, with different numbers of participants, and with the amount of time spent by individuals involved with video teleconferencing. The data shows the video teleconference format to have many variables to be important for a successful video teleconference.

The User Survey found characteristics of larger type video teleconferences (LVT) to differ with smaller type video teleconferences (SVT). Thus, what may work with one type of

video teleconference may not work with another type. Further, the job skills necessary to be successful with LVTs may be different from success with SVTs.

Table 1 shows Agreement/Disagreement responses to attitude statements on the University/College Administrator Questionnaire. One should note that the strongest disagreement found in Table 1 is with the statement that video teleconferencing is an "appropriate instructional delivery system for any subject matter." Thus, administrators report that video teleconferencing is not appropriate for all subjects.

Table 2 shows the descriptive demographic data for the User Questionnaire. The greatest percentage of respondents, 30.7% were found in the research or doctorate granting university.

Table 3 shows response percentages to agreement/disagreement attitude statements on the VT user questionnaire. Like the Administrator Questionnaire, VT users gave high negative responses on whether VTs are appropriate for any subject matter.

The variables considered important for successful video teleconferencing may be found in Table 4. Variables that had the lowest percentages in the very important classification are "computer interaction" and "slow-scan television instead of live television," "video teleconference sites to be at a

TABLE 1

AGREEMENT/DISAGREEMENT RESPONSES BY ADMINISTRATORS ON VIDEO TELECONFERENCING

Variable	Strongly Agree 1	2	3	4	Strongly Disagree 5
appropriate instructional delivery system for any subject matter	5.5% (3)	16.4% (9)	21.8% (12)	25.5% (14)	30.9% (17)
future of video teleconferencing very promising	37.9% (22)	36.2% (21)	15.5% (9)	8.6% (5)	1.7% (1)
willing to commit funds	22.4% (13)	39.7% (23)	22.4% (13)	10.3% (6)	5.2% (3)
best handled through university/college	25.9% (15)	31.0% (18)	29.3% (17)	8.6% (5)	5.2% (3)
college/university should install permanent facilities	32.8% (19)	34.5% (20)	19.0% (11)	8.6% (5)	5.2% (3)

NOTE: All percentages (row) indicate adjusted frequencies with n ranging from 55 to 58. Numbers within () are absolute frequencies or the number of respondents within each category. The numbers 1, 2, 3, 4, 5 are a scale with with 1 indicating strong agreement and 5 indicating strong disagreement.

TABLE 2

DEMOGRAPHICS OF VIDEO TELECONFERENCE USERS

My organization/institution is best described as:	
research or doctorate granting university	30.7% (71)
comprehensive university or college that offers a liberal arts program	6.9% (16)
liberal arts college (I or II)	0.0% (0)
2 year community or junior college; and at least two professional courses of study	5.6% (13)
a firm or privately owned corporation	5.6% (13)
independent small business	0.9% (2)
broadcast television station	29.9% (69)
other	19.5% (45)
n	229
Title of respondent:	
President	2.2% (5)
Vice President or Vice or Associate Dean	6.1% (14)
Provost	0.0% (0)
Dean	0.4% (1)
Chairperson of Department of Communications	4.3% (10)
Director, Television Services; Program Director; Production Manager	32.0% (74)

TABLE 2--Continued

Assistant Director	3.0% (7)
Adult Extension Director	14.7% (34)
Assistant Extension Director	4.8% (11)
Other	32.5% (75)
n	231

I have been involved with video teleconferencing:

less than 1 year	4.8% (9)	1 to 2 years	21.5% (40)
2 to 3 years	33.9% (63)	4 to 5 years	22.6% (42)
5 to 7 years	7.0% (13)	7 to 9 years	4.3% (8)
about 10 years	3.8% (7)	11 to 15 years	1.6% (3)
15 to 20 years	0.5% (1)	more than 20 years	0.0% (0)
n			186

From January 1983 to the present I have been involved with:

one video teleconference	2.7% (5)
2 - 4 video teleconferences	13.4% (25)
5 - 8 video teleconferences	27.4% (51)
9 - 12 video teleconferences	26.3% (49)
more than one video teleconference each month	14.5% (27)
several video teleconferences each month	14.5% (27)
I have not been involved with any video teleconferences during that time although I have been involved with video teleconferences before	0.5% (1)
n	184

TABLE 2--Continued

I am generally involved with video teleconferences that have the following average number of participants: (consider all participants at all sites)

2-5 persons	0.5% (1)	51-100 persons	7.0% (13)
6-25 persons	34.8% (65)	101-250 persons	2.7% (5)
26-50 persons	24.1% (45)	251 or more	11.2% (21)
amount varies so much that no typical enrollment exists			19.8% (37)
n			187

As part of my job, I am involved with video teleconferencing approximately:

under 10 percent of the time	52.4% (100)
10-25 percent of the time	27.7% (53)
26-50 percent of the time	8.4% (16)
51-75 percent of the time	3.7% (7)
76-95 percent of the time	1.6% (3)
all or nearly all of the time	6.3% (12)
n	191

The average number of earth station sites for a video teleconference(s) I have conducted or been a part of is:

Two: 15.7% (26) Three: 3.6% (6) Four: 0.0% (0) Five: 1.8% (3) Six: 1.2% (2) Seven: 0.6% (1) Eight: 1.2% (2) Nine: 0.0% (0) Ten+ 32.5% (54)

impossible to say as the number of sites per teleconference varies considerably	42.8% (71)
n	165

TABLE 2--Continued

My experience with video teleconferencing is one that is involved with (select only one):	
producing or organizing profit teleconferences for others	18.3% (33)
teleconferences that are held in conjunction with other offices or divisions of my company	26.1% (47)
non-profit teleconferences for others	28.3% (51)
technical matters only	5.6% (10)
other	21.7% (39)
n	180
I help to (select all that apply):	
write	11.8% (2)
produce	28.3% (53)
coordinate different locations	58.3% (109)
supervise	59.4% (111)
technically operate	27.3% (51)
promote	55.6% (104)
other	26.7% (50)
n	480

NOTE: All percentages (column) indicate adjusted frequencies with n giving number of respondents per each item. Numbers within () are absolute frequencies or the number of respondents within each category.

TABLE 3

AGREEMENT/DISAGREEMENT RESPONSES BY USERS OF VIDEO TELECONFERENCING

Variable	Strongly Agree 1	2	3	4	Strongly Disagree 5
appropriate for any subject matter	8.1% (15)	17.7% (33)	25.3% (47)	18.8% (35)	30.1% (56)
future of video teleconferencing is promising	43.6% (82)	29.3% (55)	20.7% (39)	4.8% (9)	1.6% (3)
best used with small (under 25) groups	8.0% (15)	16.6% (31)	37.4% (70)	25.7% (48)	12.3% (23)
best used with groups of more than 25	8.6% (16)	13.9% (26)	43.3% (81)	21.4% (40)	12.8% (24)
video teleconferences are best handled through a university with teleconference facilities	13.3% (25)	18.6% (35)	22.3% (42)	18.6% (35)	27.1% (51)
as someone becomes familiar with teleconferencing, acceptance improves	38.6% (73)	46.0% (87)	11.1% (21)	3.2% (6)	1.1% (2)

larger, university-type video teleconferences are very different from smaller, business type video teleconferences designed for "in-house" use	38.7% (72)	21.5% (40)	18.3% (34)	14.5% (27)	7.0% (13)
a company or university should install permanent facilities as the medium is so important that it can be used effectively on a regular basis	22.2% (42)	30.7% (58)	25.9% (49)	18.5% (35)	2.6% (5)
some video teleconferences are best held in series type format on same or similar subject weeks or months apart as it is possible to try to do "too much" in one teleconference	34.6% (65)	46.3% (87)	12.8% (24)	4.3% (8)	2.1% (4)

TABLE 3--Continued

Variable	Strongly Agree 1	2	3	4	Strongly Disagree 5
the sense of identity ("my company/university is the best") weakens video teleconferences as, "Why should I admit the other guy has something better?"	8.2% (15)	17.5% (32)	32.2% (59)	25.7% (47)	15.8% (29)

NOTE: All percentages (row) indicate adjusted frequencies with n ranging from 182 to 189. Numbers within () are absolute frequencies or the number of respondents within each category. The numbers 1, 2, 3, 4, 5 are a scale with 1 indicating strong agreement and 5 indicating strong disagreement.

TABLE 4

PERCEPTIONS OF DEGREE OF IMPORTANCE FOR SUCCESSFUL VIDEO TELECONFERENCING

Variable	VI	SI	RI	NI
technical expertise	77.2% (142)	18.5% (34)	2.2% (4)	2.2% (4)
ability to adapt curriculum or subject matter to a technical medium	67.9% (127)	29.9% (56)	1.6% (3)	.5% (1)
a large screen for viewing	25.7% (48)	54.0% (101)	11.8% (22)	8.0% (15)
sending literature to persons prior to attending	58.6% (109)	30.1% (56)	9.7% (18)	1.6% (3)
two-way voice communication among key individuals at all sites	47.3% (89)	41.0% (77)	9.6% (18)	2.1% (4)
two-way video and voice communication among all sites	11.3% (21)	21.0% (39)	44.1% (82)	23.7% (44)
interaction among participants (audience) at all sites	38.2% (71)	43.0% (80)	13.4% (25)	5.4% (10)
computer interaction	0.6% (1)	26.5% (45)	47.1% (80)	25.9% (44)

a local question and answer session among individuals at a location immediately after a presentation	45.9% (85)	38.9% (72)	12.4% (23)	2.7% (5)
a question and answer session among individuals at all or several locations immediately after a presentation	21.4% (39)	48.4% (88)	24.7% (45)	5.5% (10)
pace and timing of the material presented	85.0% (159)	13.4% (25)	1.1% (2)	0.5% (1)
local group discussion at each site	48.9% (91)	40.3% (75)	9.1% (17)	1.6% (3)
to have a local "in-person" presentation(s) or group discussion(s) in addition to the video teleconference presentation	34.9% (65)	43.5% (81)	19.4% (36)	2.2% (4)
video teleconference sites to be at a college or university	4.3% (8)	35.3% (65)	18.5% (34)	41.8% (77)
workbook materials to supplement the video teleconference	39.8% (74)	50.5% (94)	5.4% (10)	4.3% (8)

TABLE 4--Continued

Variable	VI	SI	RI	NI
video teleconferences to produce measurable changes in behavior (to cause someone to do something as a result of attending the video teleconference)	12.5% (22)	51.7% (91)	24.4% (43)	11.4% (20)
for participants to meet new people with similar interests during a video teleconference	13.0% (24)	57.1% (105)	23.9% (44)	6.0% (11)
technical quality of the presentation	84.4% (157)	14.5% (27)	0.5% (1)	0.5% (1)
low cost to participants	36.8% (68)	57.3% (106)	5.4% (10)	0.5% (1)
a moderator with "show business" or communication skills at the key location who can provide enthusiasm, coordination and motivation	45.1% (83)	43.5% (80)	8.7% (16)	2.7% (5)
a moderator with "show business" or communication skills at each site location who can provide enthusiasm, coordination and motivation	13.8% (25)	48.1% (87)	27.1% (49)	11.0% (20)

a professional educator to design a video teleconference	14.2% (26)	43.7% (80)	25.7% (47)	16.4% (30)
to have a recognized expert discuss each topic	51.4% (94)	38.8% (71)	7.1% (13)	2.7% (5)
slow-scan television instead of "live" television	0.6% (1)	5.8% (10)	39.5% (68)	54.1% (93)
live or "normal" television instead of slow-scan tv	50.9% (87)	39.8% (68)	5.3% (9)	4.1% (7)
microphones placed in key parts of an auditorium for questions from participants	25.8% (47)	48.9% (89)	18.7% (34)	6.6% (12)
sponsorship by a large corporation or organization	6.7% (12)	50.8% (91)	21.2% (38)	21.2% (38)
sponsorship by a major university	5.6% (10)	49.7% (88)	23.2% (41)	21.5% (38)
a profit to be made from the video teleconference	27.8% (50)	48.9% (88)	12.8% (23)	10.6% (19)
persons to travel less than 150 miles to attend a video teleconference	64.3% (119)	27.6% (51)	3.2% (6)	4.9% (9)
limiting the number of people at each site to less than 50	6.0% (11)	39.9% (73)	30.6% (56)	23.5% (43)

TABLE 4--Continued

Variable	VI	SI	RI	NI
limiting the number of questions asked from each site	15.4% (28)	49.5% (90)	23.1% (42)	12.1% (22)
adhering to a strict schedule	66.8% (125)	28.9% (54)	3.2% (6)	1.1% (2)
live questions from audience participants at a remote site(s) must be screened in advance to stick to topic being discussed	28.0% (52)	46.2% (86)	18.8% (35)	7.0% (13)
live questions from audience participants at a remote site should be written and panelists asked such questions by a moderator (hence, no direct talk-back by person who asked the question)	6.5% (12)	33.7% (62)	32.6% (60)	27.2% (50)

NOTE: All percentages (row) indicate adjusted frequencies with n ranging from 170 to 188. Numbers within () are absolute frequencies or the number of respondents within each category. Code: VI=Very Important; SI=Somewhat Important; RI=Rarely Important; NI=Not Important.

college or university," "sponsorship by a major university," "sponsorship by a large corporation or organization," and "limiting the number of people at each site to less than 50." Nine questionnaire variables were considered to be very important by more than 50 percent of the respondents and included pace and timing of material presented, 85.0%; technical quality of the presentation, 84.4%; technical expertise, 77.2%; ability to adapt curriculum or subject matter to a technical medium, 67.9%; adhering to a strict schedule, 66.8%; persons to travel less than 150 miles to attend a video teleconference, 64.3%; sending literature to persons prior to attending, 58.6%; to have a recognized expert discuss each topic, 51.4%; and live or "normal" television instead of slow-scan TV, 50.9%.

The User Questionnaire respondents report that they believed the one most important element for a successful video teleconference to be "subject matter that is appropriate for the medium of teleconferencing." In other words, video teleconferencing is not equally applicable to all subjects or topics and, therefore, one must carefully select.

In response to the statement, "I believe the chief disadvantage for a video teleconference is ..... ," nearly half of the respondents or 47.6% selected the completion statement as, "the inability of persons sponsoring video teleconferences to develop delivery or instructional techniques

that utilize the video teleconference technology" (see Table 5).

Pace and timing of the material presented was reported to be very important by 85% of the respondents while the technical quality of the presentation was very important by 84.4%. The respondents reported that interaction and question and answer sessions are important as part of a video teleconference format.

When the type of institution is compared (analysis of variance) with all questionnaire variables, important differences emerge. The longest involvement with video teleconferencing was found in the "other" category with privately owned corporations conducting the greatest number of video teleconferences. Businesses and universities do not agree about who should handle video teleconferences. Universities generally agree that VTs are best handled through a university with teleconference facilities while businesses generally disagree. Persons at junior colleges are the most likely to consider technical expertise important while firms or corporations are the least likely to consider technical expertise important. Firms or privately owned businesses consider two way video and voice communication among all sites to be important while research universities do not. Limiting the number of people at each site to less than 50 is most important for privately owned corporations and least

TABLE 5

SUCCESS AND ADVANTAGES/DISADVANTAGES

BY USERS OF VIDEO TELECONFERENCING

To me, a successful video teleconference is one that (select only 1):		
*1 is measured by attendance	3.8%	(7)
*2 is measured by acceptance of persons attending	30.4%	(56)
*3 cannot be immediately measured	8.7%	(16)
*4 measured by *1 and *2	53.8%	(99)
*5 can't say	3.3%	(6)
n		184
I believe the one most important element for a successful teleconference is:		
good equipment and signal	6.5%	(12)
dynamic leaders at individual sites	5.9%	(11)
subject matter that is appropriate for the medium of teleconferencing	42.5%	(79)
other	5.9%	(11)
there is no one important element	39.2%	(73)
n		186

TABLE 5--Continued

A successful video teleconference should have a length of:		
2 or 3 days	0.5%	(1)
no more than two days	0.5%	(1)
no more than one day	10.3%	(19)
only part of a day	14.7%	(27)
actual video time of no more than 3 hours	14.7%	(27)
will vary because of content and goals sought	57.6%	(106)
Other	1.6%	(3)
n		184
I believe the chief advantage for a video teleconference is (select only one):		
*1 cost	3.7%	(7)
*2 bringing people together who otherwise could not attend for reasons including distance	13.4%	(25)
*3 the bringing together of personalities (sometimes experts in the subject area) who, otherwise, would be unable to meet at a single location	23.0%	(43)
*4 other	1.6%	(3)
*5 it is impossible to give a single advantage as *1, *2, and *3 are all important advantages	58.3%	(109)
n		187

TABLE 5--Continued

I believe the chief disadvantage for a video teleconference is (select only one):	
cost	20.8% (35)
the lack of human communication possible through video screens and not having face-to-face communication	24.4% (41)
the poor quality of equipment usually available for such endeavors	2.4% (4)
the inability of persons sponsoring video teleconferences to develop delivery or instructional techniques that utilize the video teleconference technology	47.6% (80)
video teleconferences have so many disadvantages that it is hard to pick one	4.8% (8)
n	168
I believe video teleconferencing will:	
Positive Responses	56.5% (74)
Neutral Responses	37.4% (49)
Negative Responses	6.1% (8)
n	131
Missing Responses (% in Relative Frequency)	43.3% (100)

NOTE: All percentages (column) indicate adjusted frequencies unless labeled relative frequency with n giving number of respondents per each item. Numbers within () are absolute frequencies or the number of respondents within each category. Numbers with * indicate questionnaire response numbers that indicate a combination of possible answers.

important for research universities. With persons who are part of smaller, under 25, VTs, technical expertise is more important than with larger video teleconferences. As the number of persons involved with video teleconferences increases, so does the likelihood that the respondents are more likely to produce, coordinate different locations, supervise and technically operate and do something in addition (with the "other" category).

Data Supported Principles for Video Teleconferencing What to Do and What to Avoid

Data from this study demonstrates video teleconferencing to be a multifarious medium with certain commonalities and differences. A number of variables have been found to be important for a successful video teleconference. Thus, success or failure does relate to how one uses or formats video teleconferencing.

Variables thought to be important by more than 50% of the user respondents form a good "What to Do" list and include pace and timing, technical quality of the presentation, low cost to participants, participants to meet new people with similar interests, a large screen for viewing, video teleconferences to produce measurable changes in behavior, sponsorship by a large corporation or organization, and workbook materials to supplement the video teleconference.

A "What to Avoid" list might include avoiding longer video teleconferences of a day or more, although length will vary because of content and goals sought. Promoters of video teleconferences will have difficulty if they avoid strict scheduling (68.8% report adhering to a strict schedule to be very important).

A large majority, or 91.2% of administrators, report positive perceptions about video teleconferencing with 72.2% reporting that video teleconferencing is best administered through continuing education/community service/extension. About half or 49.1% of the respondents reported that their college/university did not have credit courses that included some form of video teleconferencing.

Guidelines for Effective Video Teleconferencing

The data and variables discussed provide important information for understanding the video teleconference. Probably, many individuals would argue that video teleconferencing would not be preferred to personal contact if such contact were possible given the same considerations of cost, time to meet with all involved, travel and other considerations. Face-to-face meetings with experts and people who must communicate with each other are not always possible given "real-world" considerations.

The data in this study represent credible views because

they are from persons involved in one way or another in the video teleconferencing medium. A viewpoint close to the purpose of the intended video teleconference should be carefully considered. The data and research suggest several principle-based guidelines to do effective video teleconferencing:

(1) Educators cannot take traditional curriculum principles and apply such to video teleconferencing. Video teleconferencing is very different from traditional classroom teaching and requires planning and delivery akin to the medium. Good video teleconferences match subject matter with what the medium can and cannot do.

(2) Rarely have transmission time of more than half a day. Longer video teleconferences can be self-defeating.

(3) Choose presenters who are skilled in television-type presentations that allow audience interaction.

(4) Consider alternative methods of delivery. The experts say that video teleconferencing does not work with all subjects or all situations.

(5) Provide supporting workbook or print material before and after the video

teleconference.

(6) Interaction is extremely important and separates video teleconferences from simply watching a television program. Interaction must be controlled at the local site and through the network by individuals skilled in editing unnecessary remarks. Pace and timing may be lost without skillful weaving of presentation and interaction.

(7) Poor technical quality will ruin a video teleconference. Nothing could be worse than having 200 or so people squinting at a 19-inch television screen or failing to hear comments made because of poor audio.

Although such principle-based guidelines may not apply in every situation, data and knowledge about the video teleconference medium can help guide continuing education professionals and others as involvement in this newly emerging field increases. In part, the diverse uses of the video teleconference medium mirror differences found in the organizations who plan such teleconferences.

Success with the medium depends, to some extent, on who defines success and whether the individual has experience at the community college level, a university,

or with large corporations. The data suggests that meaningful uses of the video teleconference medium in specialized situations require extensive planning and an acute awareness of perceptions about the limitations and uses of the medium.

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COMPUTER INSTRUCTION and ENHANCEMENTS

via

AUDIO TELECONFERENCING

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COMPUTER INSTRUCTION and ENHANCEMENTS Via AUDIO TELECONFERENCING

Introduction

Three major ingredients have set the stage for use of audio teleconferencing to play an important role in computer instruction. The first is centralization of specilized business operations while adding multiple locations to conduct business. Computer automation has made feasible centralizing such operations as purchasing, accounting, regional distribution centers, and human resource functions. For example, sales results can be instantaneously transmitted via computer from many sales centers to a central operation.

The second ingredient is continuing rapid change of computer systems and updating of current systems to accomodate changing needs of business.

Third, is the need for employees at all locations of a business to stay up-to-the-minute current in use of company computer functions. This can involve keeping up with computer changes or enhancements, cross training, training for new employees and internal job changes.

Many organizations face similar situations and needs as result of introducing PCs and accompaning softwear once faced by AT&T Communications (O'Grady, 1985, p. 76):

* backlogs of employees needing training on personal computers;

* ongoing training for the introduction of new softwear tools;

* geographic dispersion of trainees;

* additional special instructors for new softwear programs;

* designing and scheduling training to avoid a great loss of employee work time.

In addition, most organizations do not have a central classroom equiped with computers dedicated for instruction.

This paper will explore using audio teleconferencing to provide computer instruction in multiple locations. The discussion is based on two assumptions; that computer instruction is best as a "hands on" activity; and that the focus is on how to operate a softwear program or use updates on a mainframe program, rather than on developing computer programs.

Combined Technologies

Computer skill instruction via audio teleconferencing combines three technologies; computers, teleconferencing, and adult education. There are technical givens and operational guidelines for each technology that need to be taken into consideration.

Computers: Technical Givens

Whether the computer program intended for instruction is on a main frame with distant stations tied into it, or on floppy disks for personal computers, the only requirement is that all locations can bring up the same screens simultaneously. For example, ten people in ten locations have an IBM DisplayWrite 3 menu screen displayed. They can be instructed to "Choose item 3 by pressing number 3. Now press Enter", and all ten people will have the same screen displayed.

Computers: Operational Guidlines

Encourage participants to have their computer turned on and checked to be sure it is functioning before the teleconference session begins. If at all possible, participants should have access to a "back-up" computer to use in case of "technical difficulties".

Obviously if the mainframe computer shuts down or is processing very slowly, all locations will be affected. Since PC's work independently, two computers could have different problems and all others working fine. The implication for instructors is to be prepared for these potential difficulties.

For example, working with a slow processing mainframe the instructor may have to go slower and not cover as much material as planned. The person responsible for operating the main computer should be involved with the program and "standing by" during class sessions. Often a minor problem can be taken care of immediately, saving your planned program for that day.

When using PC's it can be easy to get side tracked trying to solve one person's technical problem while all others waste their time. Establish the guideline with participants before sessions begin that if an individual has problems with their PC they may have to become a listening participant for that session.

Audio Teleconferencing: Technical Givens

Audio teleconferencing is simply a way of connecting multiple locations via telephone to allow for two way communication between all locations. Although there are several ways to connect multiple locations, the best systems option is one that uses an operator assisted conference bridging service.

If there is only one participant at each location each person can use their regular phone handset to participate. If there are two or more persons at a location, either each person needs to be individually connected into the "bridge" or each location can use terminal equipment that includes microphone and speaker. Terminal equipment allows a group at one location to participate over one phone line.

Use good quality terminal equipment in audio teleconferncing whether an individual or group is at a location. Good terminal equipment has several beneifts. Without visual input sound quality becomes very important. Poor sound quality, such as recieved from a "squawkbox", will quickly distract from the Teleconference session. The telephone handset is an open michrophone receiving any sounds from the individual and the surounding area. Multiply this by number of locations and it becomes a noisy session. It is therefore helpful to use terminal equipment even with one person at a given location. Many sessions require note taking and with computer training, which requires hands on the key board, 30 to 60 minutes can be a long time to hold a phone handset on ones neck and shoulder. It is best to consult with a teleconferencing vendor who specializes in teleconferencing regarding various equipment and bridging options.

Audio Teleconferencing: Operational Guidelines

A good recommendation is to use the basic guidelines for dealing with the human factors in teletraining as described by Lorne A. Parker. The guidelines focus on four main areas; Humanizing, Participation, Message Style, and Feedback (Parker, 1984, chap. 4). These will be discussed more throughly under Adult Education: Operational Guidelines.

There are several other guidelines for audio teleconferencing specific to computer instruction:

1. Continually check with participants to be sure they are where you want them to be in the computer program. As much as possible ask participants what they have on their screen rather than telling them what they should have on their screen. For example, ask, "Bob, tell me what the first line on your screen says?", or "Wenda, what answer did you get?" When the participant has answered, confirm that it's correct or incorrect and/or ask other participants if they have the same response on their screen.

2. It's usually better to direct your questions to specific persons or locations rather than open ended. Instead of, "Does everyone have the help menu on their screen?", ask, "Joe, do you have the help menu on your screen?" Another way to confirm the same information is to ask, "Mary, what do you have on your screen?" Mary, "I have the help menu!"

3. After asking a question, allow time for participants to stop working on their computer, process your question, and speak through the teleconferencing equipment. This response time will vary with the type of computer and teleconferencing equipment and to what degree the participant is familiar with the equipment and the computer program.

4. Keep the number of locations and participarts to a manageable size for the type of computer instruction being conducted. The more locations the more places there are to involve and check to insure understarding. The need for interaction needs to be balanced with the time used for that process.

Adult Education: Technical Givens

As in any adult education program the basic "givens" of an adult education program development process should be applied. Knowles provides a basic outline, "As I see it, this andragogical process involves the following phases...:

1) The establishment of a climate conducive to adult learning;

2) The creation of an organizational structure for participative planning;

3) The diagnosis of needs for learning;

4) The formulation of directions for learning (objectives);

5) The development of a design of activities;

6) The operation of the activities;

7) The rediagnosis of needs for learning (evaluation)" (Knowles, 1980, p. 59).

Although some of the terminaology may differ and the order of occurance for phases may differ, each development phase needs attention. Because of cost-related-to-time constraints and limited visual input of audio teleconferencing, attention to detailed planning in each phase is necessary.

Adult Education: Operational Guidelines

A basic needs assessment will determine such information as the level of computer training needed, the priority computer functions participants need to know for ongoing job requirements, and what computer functions on which participants feel they need assistance. An important initial source of needs information is top management of the company.

Top management holds information on what are important computer functions for the organization now and in the future. For example, if it is decided that in the next eighteen months a standard word processing program will be used as computer terminals are phased in and all typewriters are removed, the obvious potential training needs center on computer skills and the chosen word processing program.

Formulation of objectives is based on identified needs. It is helpful to establish overall goals or objectives for the program that reflect the company direction. Specific program strategies to accomplish these goals are then developed. Using the above example, a major strategy would probably be to conduct a series of skill workshops on computer operation and specific softwear packages. Specific objectives of each workshop are then based on needed content of how to operate and use the computer and softwear and the current level of participant content knowledge.

The other guidelines for adult education were adapted for teleconferencing by Parker (1984) mentioned earlier. "Humanizing" is the focus on establishing a climate conducive to learning (Knowles, 1980). Because the group in a teleconfernce session is separated by distance, the humanizing aspect is extremely important. It also needs to be well planned and started prior to the first session. Sending participants a welcome letter, an outline of the program including objectives, and a participant "roster" are samples of begining the humanizing process. If possible a phone call to individual particiants to discuss the program will help in addressing their concerns and to learn of their current skill levels.

Parker (1984) reports that, "there is a direct link between humanizing and participation" (p. 40). Computer instruction via teleconference provides continuous opportunities for encouraging participation.

Using open ended questions such as, "What do you have on Your screen?" and problem solving activities followed by discussion are good participation techniques. The techniques discussed under "Teleconferencing Operational Guidelines" are also participation techniques.

Parker (1984) suggested three areas of Message Style techniques, Guidance, Variety, and Repetition. Examples of these techniques were presented earlier. In addition to being a part of Humanizing, providing written outlines assists general guidance of the participant. Explaining what function they will perform next and why before having participants carry it out also helps guide them through new material. The standard speakers guideline of "Tell them what you're going to tell them, tell them, then tell them what you've told them" basically applies to computer training via teleconferencing with a slight change. "Tell them what they are going to do, talk them through doing it, and review what they have done" provides guidance, variety and repetition.

In addition to the standard means of mailing out assessment forms and requesting verbal feedback for evaluation purposes, a specific assignment incorporating the skills covered can be completed and sent to the facilitator.

Summary

O'Grady (1985) indicated that for A.T.& T. Communications it became apparent, "that ignoring how technology is introduced into the workplace could discourage people from using it" (p. 81). Teleconferncing can play a significant role in properly introducing computer automation or automation changes for a business with multiple workplace locations. Strategies for providing rationale for the change, discussing employee concerns, and providing specific computer skills instruction can be efficiently and effectively achieved through audio teleconferencing.

However, as with any teleconference session, computer instruction needs to be well planned. The technical givens of computers, teleconferencing and adult learning must be considered and appropriate guidelines followed for successful computer instruction programs via audio teleconferencing.

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I M P L E M E N T A T I O N H A N D B O O K

F O R

G E D O N T V

DISTANCE LEARNING PROGRAM

FOR

DELIVERY OF ADULT BASIC AND SECONDARY EDUCATION

PROGRAM YEAR 1986/1987
Project #77320202

Funded by
The Division of Adult and
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PREFACE

Odessa College received funding from the Division of Adult and Continuing Education Programs of the Texas Education Agency for a Special Project for Distance Learning for the 1986/1987 adult education program year. The project developed and implemented a televised delivery system for GED which complemented and supplemented existing adult education programs and was incorporated into regular program operations without significantly increasing program costs. The Kentucky Education TV program, GED on TV, was identified and utilized for this project. This is an excellent program for those adults who need to prepare for the GED exams and who cannot or choose not to participate in the traditional adult education programs provided by the college.

This Project Implementation Handbook was produced to be disseminated to adult education organizations with a need for serving the adults addressed above. It is the result of careful documentation and monitoring of the Special Project conducted by Odessa College and presents various ways the program operated to enable the college to reach a greater number of students in a variety of settings. Input and direction came from many resource people involved in the project. These include project staff, adult and continuing education administrators, instructors, students and the Special Project Advisory Board.

The writer of this handbook realizes that circumstances and situations differ from region to region and from program to program. For those reasons, this handbook should not be perceived as an all-inclusive solution to programming for the "distance Learner". It does present an accurate

picture of methods and components that contributed to an effective program for Odessa College. Prospective program operators should use this handbook as a guide for developing their respective programs and build in any changes that would meet the individual needs of their students and/or program operation.

PROGRAM IMPLEMENTATION HANDBOOK

GED ON TV

There are many steps to be taken to ensure a quality program that will meet the needs of that segment of the adult population that cannot or chooses not to participate in the traditional adult education delivery system. The GED on TV is a viable alternative with the possibility of reaching a significant number of adults needing to complete their secondary education in a non-threatening atmosphere. This Special Project was also an effective mechanism for recruiting students into the traditional programs. Three major reasons for the increase in traditional program enrollments were:

1. Student was below 9th grade performance level.
2. Student resided outside the PBS broadcast area.
3. Student gained confidence after working with GED on TV and sought more personal instruction through classes.

This handbook has been produced to enable adult education organizations that choose to implement the GED on TV program to develop, in a timely manner, similar projects in their respective areas of operation. It is written in the chronological order that the project was piloted at Odessa College. Each prospective program operator should feel free to make any changes that would enhance the individual objectives and goals of his/her program. Although this handbook presents the successful components of the pilot program, at times it will refer to problems that arose and the steps that were taken to overcome them. It is composed in a manner that is easy to follow, step by step, through the process experienced by Odessa College. The project staff hope that those choosing to implement GED on TV receive as much enjoyment and satisfaction as we have.

Once the adult education organization has decided to implement the GED on TV program, goals and objectives need to be established. These may be as simple or as complex as the program operator desires. If there is a pressing need for program delivery in a relatively short time frame, the operator might want to start with a less complex plan and build on this as the program progresses. The pilot project showed that upon program commencement, day to day operations demanded much of the time, keeping the coordinator from some of the developmental tasks that needed immediate attention. Unless the program has assigned a coordinator, these tasks can be quite time consuming without a plan in place. The following suggested goals and objectives were used by the pilot project and served quite well.

I. Major Goals;

A. To provide a basis for increasing the number of adult learners without significant increases in public expenditures.

B. To extend the ability of the adult education delivery system to provide and support instruction in a variety of adult learning settings.

C. To develop a process for articulating broadcast, cable, and taped GED instruction with user agencies that provide support services such as sites, instructors, tutors, study materials, etc. These can include employers, service agencies, libraries, churches, community organizations, and public schools.

II. Objectives:

A. Develop a plan of operation and implementation. (This handbook will assist greatly with this objective.)

B. Establish an advisory board or committee.

C. Identify implementation sites.

D. Develop and provide instructor/support training workshops or individual training.

E. Develop and implement a publicity campaign.

F. Develop and Implement a registration/enrollment system.

G. Develop and implement a record keeping system.

H. Develop and implement a monitoring and evaluation system.

I. Develop and Implement a system for collecting contact hours. (This project has a system approved by TEA and is available upon request.)

The above set of goals and objectives should be viewed as minimal requirements for an effective program. These will be addressed in more detail below.

SECTION I. DEVELOP A PLAN OF OPERATION AND IMPLEMENTATION

There are many items to be considered in this formative stage of the program. The operator needs to decide on the scope of the program; the population he/she wishes to reach; the resources available to achieve the goals; the time-line for staff orientation and training; the starting date and times of broadcast; publicity; identification of user sites if tapes are to be used; material distribution; recruitment and enrollment; monitoring; motivation and support for the at-home participants; coordination with local, state, and federal community based groups or institutions; pre-testing, post testing and the GED exams; and record keeping and evaluation of the program. Samples of the forms and publicity flyers, questionnaires, communication letters, pre and post tests that can be considered, and other reference items are attached to this handbook. A final report to TEA is available upon request from TRENDS and at cost from Odessa College. This will add further information beneficial to the program operations.

SECTION II: ESTABLISH AN ADVISORY BOARD

The program operators from the adult education field will have an established local advisory board and may use this group for oversight and in-put for the program. Some may wish to form a separate committee just to concentrate on the GED ON TV activities. Those operators not in the college adult education department or who do not have an advisory board can certainly benefit from an organized board or committee. Suggested members for the board include representatives from:

-individuals experienced in program implementation, instruction, and evaluation in adult education;

-ABE Co-ops

-PBS station

-other broadcast and printed media

-human resources agencies

-local public schools

-local elected official

-public libraries

-literacy organizations

-employers and business and industry

-various organizations and institutions whose clients can benefit from the program

-program participants whenever possible

The role of the board should be well defined and would be determined by local program operators. This can vary from a simple in-put and review function to active participation in the publicity, recruitment, site selection, and support services to the participants. A participatory board considerably increases the impact of the program on the public and the students, and substantially contributes to the success factor.

SECTION III: IDENTIFY IMPLEMENTATION SITES

The primary site will be the students' homes, as the majority of the students will be receiving the instruction via television. Preliminary research needs to be completed well ahead of the publicity and recruitment or the operators may find, as Odessa College did, a substantial reduction in projected students due to the fact that the PBS broadcast did not reach a large geographic area of our Co-op region. The operator needs to survey the PBS station and the area towns and communities to ascertain PBS reception. Another task is to contact all the cable providers in the target area to determine if they carry PBS and to identify the proper channel numbers to include with the publicity and the schedules. It was into the third week of broadcasting that Odessa College discovered three separate cable providers in the Odessa city limits, and we had printed and distributed over 3,000 flyers with only one channel. The channels and PBS coverage information need to be distributed to all persons involved in recruiting and publicity, as well as to those who will be answering phones and providing information to prospective students.

For those operators who choose to purchase the original broadcast tapes from Kentucky Education TV, several options exist for program expansion into sites that would not otherwise have access to the program. These options include several advantages that make the initial financial outlay a wise investment. Purchase of the tapes allows the operators to duplicate and place tapes in adult learning centers, libraries, resource centers, worksites, or other sites that would be accessible to the participants for individual study, review, classroom instruction, or supplemental instruction for traditional ABE or GED classes. A couple of the public schools in the Odessa region used the tapes to enhance their high school students' reading and math classes.

One of the objectives of the program is to provide GED preparation in non-traditional settings for those adults who cannot participate in the regular classes because of conflicts with work schedules, transportation, or confinement such as restitution centers, rehabilitation centers, jails, or other related sites. The televised program schedule may well not be feasible for many of these adults, just as the regular classes are not.

A program that owns the tapes and the rights to duplication can double or triple the number of adults to be served. Those programs that cannot afford the cost of the tapes can approach interested local groups, employers, agencies, or other public benefactors for financial support. A consortium of sponsors could easily come up with the required amount for the tapes.

One important consideration is to the staffing of the sites. Most adult education programs are severely limited in funding for instructors and aides. Each site must have a responsible person to coordinate and provide support services to the participants. This topic will be covered in Section V.

SECTION IV: PUBLICITY AND RECRUITMENT

To ensure maximum participation and minimal confusion, the publicity must be carefully coordinated and well planned. Involvement and in-put should come from the program operator, PBS station, local sites, ISD administrators, the advisory board members, local employers, and others assisting with or supporting the program. A special logo or slogan could be developed as a theme. This makes it easy for all concerned to promote, as well as for the prospective students to recognize the program. Odessa College's project received well developed promotional products developed by the Learning Resource Center on the MacIntosh computer. This instrument offers an almost unlimited capacity for rapid, creative and professional products. The operators should look to their college or sponsoring organization before they approach commercial suppliers. This can mean a substantial savings to the program.

Methods for an effective promotional campaign include, but are not limited to the following:

- Posters to be displayed in prominent sites throughout the service area.
- Flyers to distribute or include as inserts in utility bills, distribute to elementary school children, public assistance agencies, community-based organizations, to place in grocery bags, place in apartment complexes and billboards in heavy traffic areas such as laundries, foodstores, video outlets, discount stores, etc.
- Public Service Announcements on radio, TV and in newspapers. The ABC TV station can tie this to their Project Plus promotional efforts.
- Contact churches to include the information in their bulletins and to announce during services.
- Public speaking at local service clubs and organizations. Be sure to take a good supply of flyers to distribute at each speaking engagement.
- Appearances on local talk shows on radio and TV.
- Short articles for special newsletters distributed by employers, agencies, service groups, associations, professional groups, and special services organizations that work with the GED target population.
- Billboards or lighted signs if donated by the owners as a community service effort.
- Bank or other electronic displays.
- Paid or donated advertisements in newspapers. Include the weekly shoppers. Many times they will do a special rate for community effort...buy two, get one free...buy one and get an article next to the ad for more coverage.

Remember these are only suggestions. Your campaign is as free as your imagination. There are resources available in every community, they only need to be tapped.

SECTION V: SELECT AND TRAIN INSTRUCTORS/SUPPORT STAFF

To ensure quality and equitable service provision, the instructors/support staff (representatives of the program to assist students with the course work and to answer questions about the program) need to be familiar with each and every lesson from the televised lesson as well as the workbooks. In many instances, the instructors/support staff will be experienced adult educators and will only need to be familiar with the course content to respond to the student needs. In other instances, personnel from non-adult education backgrounds, such as business and industry, JTPA, vocational and correctional centers, local public schools, service agencies, etc...could be joining the program. These would need more thorough preparation and support from the program operators. This can be achieved by special training workshops or individual training. For those unfamiliar with adult education techniques, the following should be presented:

- An overview of the GED on TV program's goals and objectives.
- Adult education teaching techniques and the philosophy of Adult Education.
- Tips for working with adults versus youth.
- Tips for motivation and encouragement for adult learners.
- A list of supplemental materials/resources for instructors/students and where to find them.
- Training and mock exercises for telephone responses to students' problems.
- Names, addresses and phone numbers of project administrative staff, and with permission, a list of experienced adult educators who would be available as resources.
- Training in fiscal responsibilities; forms, reporting procedures, calendars, collection of contact hours, etc.

The training should provide role-playing exercises with the instructors and support personnel responding to various situations that could come from the students. When at all possible, training for this group should be coordinated with regular staff training sessions. This will permit the traditional adult education instructors to become familiar with the GED on TV. Odessa College provided staff development for all ABE/GED instructors and provided them with sets of the workbooks, outlines, and supplemental math exercises explaining the procedures and methods for solving the problems. This was done as several GED on TV students also enrolled in the traditional program or came to those instructors for assistance with their workbook exercises.

The program operator should look for people to staff the project who have an ability to relate to people who are shy and even reluctanct to come forward for assistance. The support staff that will be called upon to maintain contact with the participants/students need to be able to respond quickly and efficiently to any concerns raised. At the same time, they need to be able to discuss, in an open manner, problems that come up at the students' home, such as interruptions from other family members, "excuses" for not having kept up with the lessons, domestic quarrels, make referrals to appropriate agency for assistance if the need is expressed, offer encouragement and motivate the students to continue their efforts even when they are facing seemingly insurmountable obstacles, and a willingness to be able to say to the student, "I don't know, but I'll find out and get back to you with the answer".

Remember that if the operator is relying strictly upon televised lessons through PBS, there will be the need for training and selecting personnel (paid and volunteer) that work very well with telephone assistance. If, however, tapes are to be distributed and learning sites to be set up, the operator may not have as much control over the selection of the staff. This could be for example, an employer who decides to offer taped lessons before and after the work shifts,

mandates that his brother-in-law be placed in control of the site program, and, does not see the need for "all that paperwork required by the feds". The operator must be able to respond to all types of situations and maintain as much control and order as possible to be able to run an overall successful program. Uniformity of training and methods of response to student needs to be promoted, but the operator should always respect individuality and creativity on part of the staff. Flexibility is the key word and sharing of successful approaches should be the aim of all programs. If staff A does something that stands out and seems to work well, share this with staff B. Honesty and sincerity should be the theme adopted by all those involved in the program. As in all programs with adults, situations will always arise that the operators/instructors have not thought of, and consequently do not have an answer "at hand". If the staff have received a good overview, have carefully studied the lessons and workbook exercises, and have a dedication to serving the student, there should be no problems too severe to overcome.

SECTION VI: DEVELOP AND IMPLEMENT A REGISTRATION/ENROLLMENT SYSTEM

The registration/enrollment process should be coordinated with the publicity campaign so that prospective students, program operators, staff, and referral or other service agencies will be aware of the time, place and procedures to follow to ensure a smooth operation. Packets of materials and instructions need to be delivered to the registration sites or to individuals responsible for implementation. Personal contact or visits by telephone to explain or answer any questions is a recommended procedure for the program operator or designated representative. Specific times and places need to be established and publicized. Allowance for variables that may surface need to be considered, such as students not being able to meet at a designated time or place. Provision should be made for morning, afternoon and evening registration. The operator may wish to use

a registration by mail, but should consider the expense and possibility of delay or lost registration forms. The operators should also consider whether they wish to employ a form of pre-test to determine the student's ability to successfully pursue the GED on TV program. Many adults who have not been in formal education classes for some time have a fear of tests and such an item up front could very well be the cause for not enrolling in the project. The program at Odessa College used a simple form of survey for student response of yes, no, used to be able; based upon the answers, the decision was made to enroll the student. In many cases the coordinator recommended enrollment in ABE level classes for those who answered no to most questions. Two prospective students were advised to take a pre-GED test as their answers indicated that they were probably ready to test. For those who were on the borderline, the decision was to allow them to enroll but they were advised that they would most likely be experiencing difficulty with their studies. In fact, these were the students who had the most contact with the program seeking assistance with the lessons.

Those programs associated with traditional adult education programs can use their enrollment forms, with an added space to identify GED on TV and to set a most convenient time for program staff to reach the student to monitor the progress and to offer counsel.

A procedure needs to be established for distribution of books, follow-up materials, questionnaires for contact hour verification, surveys for student comments on the program, or other communication the operator wishes to make. The program cannot, in most cases, provide books at no cost to the students. Some of the service providers who sponsor a site or an individual could be expected to purchase books and materials for the clients... such as Rehabilitation, Corrections, JTPA, and some employers. The majority will be purchased by the students. If books are to be mailed, costs must be added to the purchase price.

Waldenbooks and B. Dalton Booksellers carry the books in small numbers. This was learned after Odessa College bookstore placed a large order to supply the students in the pilot project. Program operators may wish to touch base with those commercial suppliers and refer all students to them for their books. This would eliminate having to stock books at the operator site. By working through the commercial suppliers, students who may need to purchase a single book, i.e. math, could do so without creating a problem for the operator, who may have to sell the books in sets, as did Odessa College. Again, a problem arises in that possibly several students couls reside in areas far removed from the commercial suppliers. Some arrangement would need to be made to get the books for them.

A suggested packet for registration purposes would include the following:

- Intake form with necessary data for student tracking and reporting
- Brief program description including a program schedule of broadcasts
- GED information...What is it? Testing sites/procedures/schedules/cost
- Schedule/location of traditional classes for those who wish to take advantage for instructor contact, co-enroll in classes, or for additional assistance
- List of resources in their area...library, schools, learning centers, Voluntary Action Centers or other sites for special needs of under-educated
- Name, address, phone number of project staff
- Information on other adult education classes/services (ESL, ABE, Literacy)
- Letter of welcome and encouragement from upper level official of the program or the sponsoring entity (i.e. Odessa College, or local PBS station chief)
- A survey instrument to determine the educational level of the student. This could be the official GED Pre-test, a simple questionnaire about adding, subtracting, multiplying, dividing fractions, frequency of reading and reading comprehension, percentages, decimals, common math functions. Other commercial instruments are: TABE and ABLE which require a long testing period and could scare away prospective students as well as requiring considerable staff hours to administer and interpret.

SECTION VII: DEVELOP AND IMPLEMENT A RECORD KEEPING, MONITORING AND EVALUATION SYSTEM

As in all adult education programs, a system of records, reports, documentation, progress, and evaluation needs to be in place for proper program implementation. Most of the forms and data collection instruments for the Special Project have been included in the appendix to the final report. For those operators who have requested this implementation handbook but have not received the final report, a packet of forms can be supplied upon request from Odessa College.

Most of the record keeping forms are the same ones utilized by the adult education programs. The only difference is in the information that can be collected by telephone contact with students who never attend a traditional classroom activity. The important issue of contact hours has been resolved by TEA with the approval of a questionnaire based upon the televised lessons. TEA has given approval for granting ½ contact hour per each lesson for each student who gives the correct answer to the questions based upon a specific lesson. This document with five questions per lesson is also a part of the final report and can be requested from Odessa College. Each operator may choose two or more questions per lesson for administering to the students. This may be done by phone or by mailing the questionnaire. The Special Project staff used two questions if sent by mail and asked four questions if administered by phone. Contact hours were given when students came into the office or classroom for assistance. No hours are permitted for telephone assistance.

A special form for monitoring student contact, problems, counseling, progress, readiness for GED exam, or any other contact topics is a necessary tracking instrument that can be reviewed by any staff member that has contact with the student. These can serve as a valuable information gatherer for the program as they can be reviewed to see if patterns of difficulty have emerged and may need to be addressed. This applies to the level of the student in relation to other students and to the specific topics covered in the lessons that present

problems to students regardless of their levels of ability. This became evident to the Special Project coordinator when several calls were received concerning wrong answers to the problems in the workbook. This form only needs the name of the student, phone number, address and name of primary contact person from the program staff. Each contact is logged with the date, the nature of the contact and the result. Samples are included in the final report.

Other forms need to be developed for documentation of staff participation in training, instruction, and other facets of the program. This especially holds true if programs are operated at support agencies, institutions, organizations, or other sites that are not directly responsible to the sponsoring program operation. Those groups must understand the importance of a closely monitored operation and the role of the sponsoring organization (adult education) as well as the responsibilities of both parties. This system of cooperative oversight will allow the operators to make any adjustments deemed necessary for a quality program that serves the needs of the students and the organizations involved.

A schedule should be developed to contact each site and to contact students to gather information on:

- Student enrollment by site
- Student participation and instruction (TV viewing, workbook activity, practice testing, contact with instructors/support staff, and GED testing)
- Student progress from student viewpoint and from instructor's reports
- Collection and recording of student contact hours
- Documentation of instructional/support staff participation
- Collection and analysis of suggestions/comments concerning the program operation, coordination, follow-up on student retention problems, and cost effectiveness
- Any other problems or items of importance that need to be addressed in a timely manner

SECTION VIII: DEVELOP A PLAN FOR STUDENT CONTACT

For those students who enroll for televised classes, with no contact at the classroom level or selected learning sites that may be established, it is recommended that the designated representative of the program make contact by telephone at least once every two weeks. This is not too frequent when three lessons per week are being presented. Even in the event of two lessons per week, because of the many topics covered by each lesson, a student may fall behind very quickly and become lost. Only a very few students will make the first contact, regardless of the sincerity and requests from the program staff. Most still feel that it is either an intrusion into the program staff's life or feel that they are showing their ignorance if they ask questions. However, with a friendly call from the staff on a regular basis, some sort of rapport is established and the students feel at ease. Of course there are always those who register and then disappear from the face of the earth and another group that is always doing just great and watching every lesson...but...they cannot answer any questions about the lessons and they never return the questionnaires.

What the program operators have to take into account is that each person that took the initial step and enrolled in the GED on TV did it for reasons really only known to him/her. It could have been family pressure, a snap decision without much thought and something to do during spare time, or from someone at work or an agency who insisted that the student enroll. Many students enrolled in the Pilot Project with very good intentions and their situation changed completely after enrolling. A mother enrolled with her teenage son to encourage him and work alongside him. Three weeks later he decided to move to Oklahoma and live with his father. Needless to say, even though the mother needed to complete her studies, she had lost the original motivation and desire to succeed. These are things that need to be addressed during phone contact.

It is also wise for the phone contact person to be knowledgeable about social agencies and where people can go for help with a variety of problems. It is surprising what total strangers will talk about once they feel that they know you. The coordinator of the Odessa Project many times referred students to agencies or individuals for counsel and/or assistance. A large number of potential students never completed the enrollment form or called back as they promised once they found out the price of the books. The project staff through presentations at service clubs and organizations was able to line up donors that would supply books for students who truly could not afford them. The project coordinator suspected that a couple of the students were just tired of being home alone with the little kids all day and would call the project and talk of everything but the lessons.

It can be seen that there are various reasons for making or accepting contact with the participants. The most important are for checking on progress, for offering encouragement and motivation, and for letting them know that the program is made up of real live people who care that they realize their goal of completing their secondary education and are willing to help them in whatever way they are capable. Once the schedule is established, remain faithful and make the call as agreed upon at the onset of the enrollment. It is O.K. for them to not be available when called, but the operator or representative should be available or have a message in case the student calls for assistance. With almost every contact remind them that they are working toward the day of the GED exam. This will make it a little easier when the time is near for the exam. Encourage them to drop by the office to take a pre-exam that can be reviewed to show them their strengths and (if any) weaknesses. Give them additional exercises or worksheets if they are weak in certain subjects. Always be courteous and show interest, and they will respond in a productive manner.

EDUCATION VIA SATELLITE: A TRINATIONAL PERSPECTIVE

by

Willard D. Shaw, Ed.D.

Academy for Educational Development

The U.S.AID Rural Satellite Program has been a six-year effort (1981-87) initiated by AID's Bureau for Science and Technology/Education to explore the potential uses of two-way telecommunications facilities--particularly satellite-mediated, telephone-based technologies--to support Third World Development efforts. The main focus of the program, implemented by the Academy for Educational Development, was on the creation of three audioconferencing networks in Indonesia, the West Indies, and Peru which linked widely-scattered locations and allowed for rapid communication and the sharing of scarce human resources.

The Indonesian Distance Education Satellite System (SISDIKSAT) links 13 remote government universities and the Directorate General of Higher Education (DGHE) in Jakarta into a two-channel telephone network that provides voice, facsimile, and telewriter facilities. The system is primarily used for an undergraduate course-sharing program among the participating campuses that reaches 2-3000 students each semester and for faculty upgrading activities annually involving 1-2000 university teachers. The system is also used by the Indonesian Open University for tutor training programs and by a variety of educational groups for administrative coordination. Plans are now underway to develop an in-service teacher training program for high school teachers. SISDIKSAT is managed by faculty members from the participating campuses. The communications links are provided through a contract with the national telecommunications company, PERUMTEL.

The University of the West Indies Distance Teaching Experiment (UWIDITE) connects the 3 main UWI campuses on Jamaica, Trinidad, and Barbados with 3 of its 11 extramural centers located on other island nations. A multinational institution supported by 14 countries, UWI uses a single channel audioconferencing network, supplemented with slow-scan video, to extend learning opportunities and support to its Caribbean constituency. UWI offers undergraduate, professional certificate, and enrichment courses for an audience including university students, university and high school teachers, doctors, and nurses. UWIDITE is managed by a university staff directed by the Pro Vice-Chancellor of UWI. Communications links are provided under contracts with the telecommunications authorities in the six countries currently connected.

The Peru Rural Communications Services Project (RCSP) is different from the first two projects in that it is managed by the Peruvian telecommunications authority itself, ENTEL, and also provides regular telephone service to the general population in the project areas. RCSP connects 7 rural communities with populations from 800-15,000 into the national telephone network and also provides audioconferencing services to the agriculture, health, and education ministries. A social services planning unit created within ENTEL works with local, regional, and national-level officials to organize in-service training and administrative meetings wtih agricultural extension and health care workers, teachers, and other government personnel in the project areas.

The experience gained and lessons learned from these three projects have been many. While this paper is far too short to deal with all of them, I will try to give a summary of some of those experiences and lessons.

Technical Performance: Each of the systems encountered serious technical obstacles during the installation phase. Not all of the technical problems were the same; however, noisy local lines were a problem in all projects. Sites close to earth stations and using new cable generally had fewer problems. Local technical staff were readily able to deal with the technology after periods of training and experience. The audio, fax, and slow-scan equipment was more reliable than the two telewriting systems used. Most of the technical obstacles were surmounted and a high reliability percentage in delivering planned programs was achieved in all projects: Indonesia (98%), Peru (96%), West Indies (90%). The major long-term challenge is a managerial one: the regular maintenance and repair of the networks.

Program Planning: The different nature of each of the systems led to different approaches to program planning. The multi-institutional SISDIKSAT followed general guidelines from DGHE but primarily relied upon periodic meetings with program coordinators from each campus to determine the courses to be taught. As a single institution, though a multi-national one, UWI had an ongoing set of programs that it wished to support, although it did respond to other needs of its audience. It also had more power to implement its programs and obtain local cooperation. In Peru, ENTEL had to work with a variety of ministries and departments to develop appropriate uses. Each project generally suffered from a lack of optimal funding for central management and program development.

Program Delivery: Programs were generally 1-2 hours in duration. Courses met weekly for four months, some administrative meetings ran every week for a year, and most seminars had only one session. Print materials supported most programs. Slow-scan video and locally-shown slides were also used. Materials developers, program presenters, and users were given orientation or training by project staff and a variety of training materials were developed in each project.

Program Monitoring and Evaluation: Each project had a monitoring system to obtain information helpful to management and users, such as data on attendance, technical quality, equipment status, and satisfaction of clientele. Generally, however, the incoming data was not readily incorporated into management decisions since it was either collected or processed too late to have an effect due to inadequate resources and manpower. Most of the evaluation activities were conducted by the AID contractors. Anecdotal information often played a greater role in affecting decision making than hard data.

Participant Satisfaction: Participants in all three projects were generally enthusiastic about the learning opportunities provided by the systems. The beneficiaries of in-service training activities were usually the most enthusiastic audiences and the ones most appreciative of the two-way communications capability. These were generally people older than the average undergraduate who had defined learning needs and who recognized the value of the learning opportunity afforded them. Teachers reacted favorably to the technology and experienced little difficulty in adapting to teaching via satellite, although most thought that it was more demanding than teaching regular classes.

Results: Each of the projects has had a strong impact upon the areas and institutions involved. Course materials are often adopted for use by teachers outside the networks. Teachers in remote areas have the opportunity to work with "master teachers" with advanced degrees and experience. Audioconferencing was shown to be a more cost-effective alternative to some face-to-face programs. It was also shown to be capable of providing services that otherwise could not be provided—like a multisite seminar program in Indonesia that attracted over 1800 participants. In addition to delivering needed courses and doubling the annual number of teachers completing the Certificate of Education program, UWIDITE also provided training to 300 nurses and 200 doctors. In the rural areas of Peru reached by RCSP, over 80% of the government field workers participated in in-service training activities via satellite. Audioconferencing was shown to be a reliable, acceptable, and effective tool for social development purposes.

The Future: The 3 networks continue to be funded by the host agencies following the end of USAID support and are being expanded. Indonesia has added 3 sites to the original 12 and is seeking World Bank funding for a replication of SISDIKSAT in western Indonesia. Two sites are being added to UWIDITE and over a million dollars has been earmarked for additional capital costs. ENTEL-Peru is obtaining 19 small earth stations so that it can reach other remote rural areas of the country. The continued expansion of satellite services across the world and the increasing availability of low-cost technologies indicates that the use of telecommunications for social development purposes will become even more common and effective in the years ahead.

WHAT IS THE AID RURAL SATELLITE PROGRAM?

- **A 6-year R&D program on the use of telecommunications as a development tool**

Specifically,

- Designing telecommunications projects to support development activities in agriculture, health, and education
- Assisting LDC institutions in educational use of the technology
- Assessing specific equipment and technologies for the developing world environment
- Working with policymakers to expand development applications of telecommunications
- Evaluating impact and effectiveness

WHAT DID THE RURAL SATELLITE PROGRAM DO?

Three Pilot Projects were designed and implemented in:

- **Indonesia:** linking 13 universities spread over 2,500 miles in a distance education network
- **Peru:** providing 7 towns in the Amazon basin with basic telephone service and a teleconferencing network for the training and administrative support of field workers
- **West Indies:** establishing a 7-nation teleconferencing network to support the University of the West Indies and other regional development activities

The Pilot Projects shared information and scarce human resources through a variety of distance education programs delivered over a single telephone circuit.

- University courses
- Teacher training
- In-service training for field workers
- Health campaigns
- Research support
- Administration and coordination activities

The Pilot Projects introduced and adapted new technologies such as:

- Unattended, solar-powered small earth station in Indonesia
- Small, 6.1-meter earth stations to connect into domestic satellite network
- Innovative, low-cost designs for rural communication networks

WHAT ARE THE COSTS OF A TELECONFERENCING NETWORK?

Three cost elements must be considered:

- o the capital costs -- the teleconferencing equipment, associated hardware, and facilities;
- o the transmission costs -- satellite "air time" and telephone lines; and
- o the management and maintenance costs -- operating the systems and developing programs for delivery.

Capital and Recurring Costs

Cost Element	SISDIKSAT (Indonesia)	UWIDITE (West Indies)	RCSP (Peru)
o Audio Equipment	$ 9,941/site	$ 4,985/site	$ 4,549/site
o Annual Transmission	118,750/yr.	104,000/yr.	no charge
o Annual Management	82,313/yr.	139,702/yr.	33,300/yr.
o Hourly Cost (transmission & management)	94/hr.	140/hr.	68/hr.

Cost Effectiveness: Comparison with Face-To-Face Delivery Methods

Activity	Face-to-Face	SISDIKSAT	UWIDITE	RCSP	Savings
o Course	$ 1,281/site	$ 542/site			58%
o Seminar (1 day, 84 people)	11,250		1,000		90%
o Workshop (6 days, 20 people)	9,325	3,384			64%
o Training (31 sessions)	4,000			2,600	35%
o Teaching Certificate	8,172/ student		3,836/ student		54%
o Visiting Professor	64/course/ student	11/course/ student			83%

WHAT DOES THE FUTURE HOLD FOR THE PILOT PROJECTS?

All host countries have continued and expanded these networks after the completion of A.I.D. funding in the 1985-86 period.

In Indonesia:

- o Ministry of Education continues to fund the system
- o 3 sites have been added with host-country funds
- o Most classrooms have been expanded to accommodate more participants (in some cases, over 100 seats)
- o Open University (enrollment 150,000 students) depends on the teleconferencing system for administration and tutor training in eastern Indonesia
- o Ministry of Education is conducting its primary and secondary teacher upgrading program via the system
- o Other Ministries and organizations have recently requested use of the system or development of their own networks
- o Ministry of Education is seeking funds from the World Bank for the creation of a satellite network in western Indonesia.

In Peru:

- o 2 sites have been added due to local demand
- o Peru's telecommunications authority (ENTEL) continues to offer the social service conferencing program
- o 19 local earth stations are being addd by ENTEL in 1987-88 based on the RSP experience
- o CORDES (rural development authority) has pledged $45 million for telecommunications infrastructure in 700 rural communities based on Pilot Project success
- o ENTEL has proposed project extension to 53 communities in the Andean Trapezoid
- o ENTEL plans to offer commercial teleconferencing service to industry and business

In the West Indies:

- o 2 nations have been added to the original system; others being planned
- o Challenge Exam program will be presented exclusively over the system for all UWI students
- o JHPIEGO reproductive health program relies solely on the system for doctor and nurse training programs
- o Other international and regional organizations--ILO, Project Hope, PAHO, Caribbean Food and Nutrition Institute--regularly use and pay for the system to deliver programs
- o The Project won the 1984 Gleaner Honor Award for its **". . . most dramatic impact on the quality and improvement of life not only in Jamaica but the entire Caribbean, enhancing the education of the people of the region."**
- o UWI has incorporated network cost into its regular budget

WHAT DID THE RURAL SATELLITE PROGRAM PROVE?

Telephone-based technology can be made reliable:

- o 98% technical reliability in Indonesia
- o 96% technical reliability in Peru

Telephone-based systems can answer development needs:

Indonesia--

- o Extends expert teaching of 17 courses to over 3,500 students each semester
- o Voluntary seminar programs attract over 1,800 participants

Peru--

- o Telephone capacity expanded twice with Peruvian funds
- o Telephone service used by over two-thirds of the region's families, yielding $100,000 annual revenue
- o Provides over 300 training conferences per year for health, agriculture, and education field workers

West Indies--

- o Doubled the annual number of Certificates of Education awarded by UWI
- o Reaches over 500 health care professionals in the region

Teleconferencing is effective:

Peru--

- o 92% of participants rate the teleconferencing program as beneficial and immediately relevant to their work
- o Over 80% of field workers in the region participated in teleconferences

Indonesia--

- o 99.2% of seminar participants requested that additional seminars be offered
- o 74% of students indicated they learned especially well from the interactive question and answer sessions
- o 67% of students felt they learned as much or more from the distance courses as from their regular classes
- o 95% of local tutors felt the students learned as much or more from distance courses
- o 100% of local tutors believed the distance course improved their teaching of similar courses on campus

Teleconferencing is affordable:

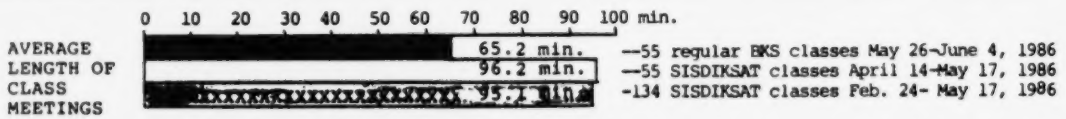
- o Course delivery cost $10/course/student over the system versus $64/course/student using existing "flying dosen" (visiting professor) program in Indonesia
- o A one-week training course for 30 people in the West Indies costs $6,000 using the system versus $19,000 for face-to-face meetings at one central location

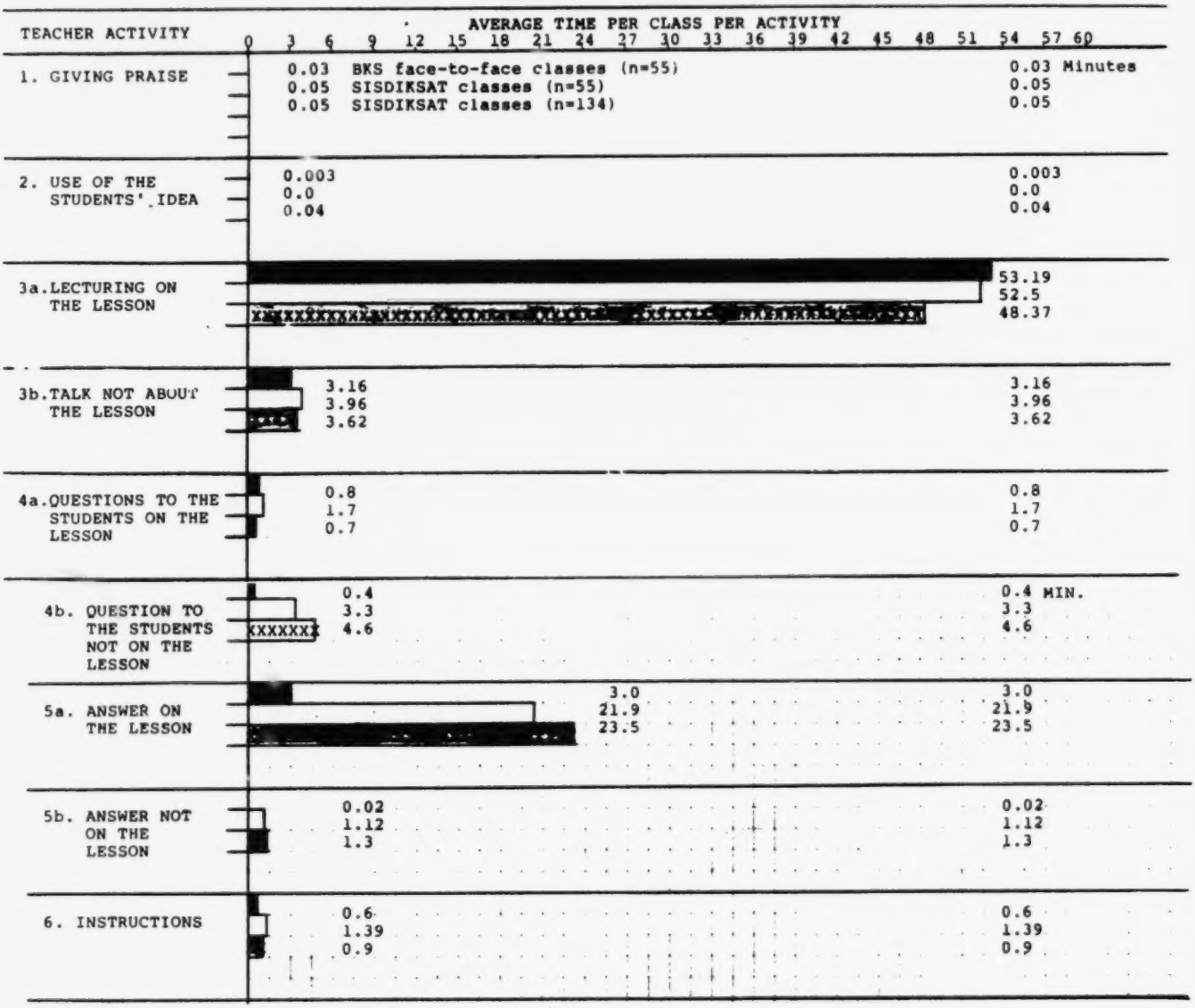
Teleconferencing is readily manageable by developing-nation institutions.

- o Part-time university staff manage the 15-site Indonesian system
- o UWI fully operates its Caribbean-wide network
- o Peru's telecommunications company manages social applications

COMPARISON OF CLASSROOM INTERACTION DATA FROM SISDIKSAT AND REGULAR BKS CLASSES

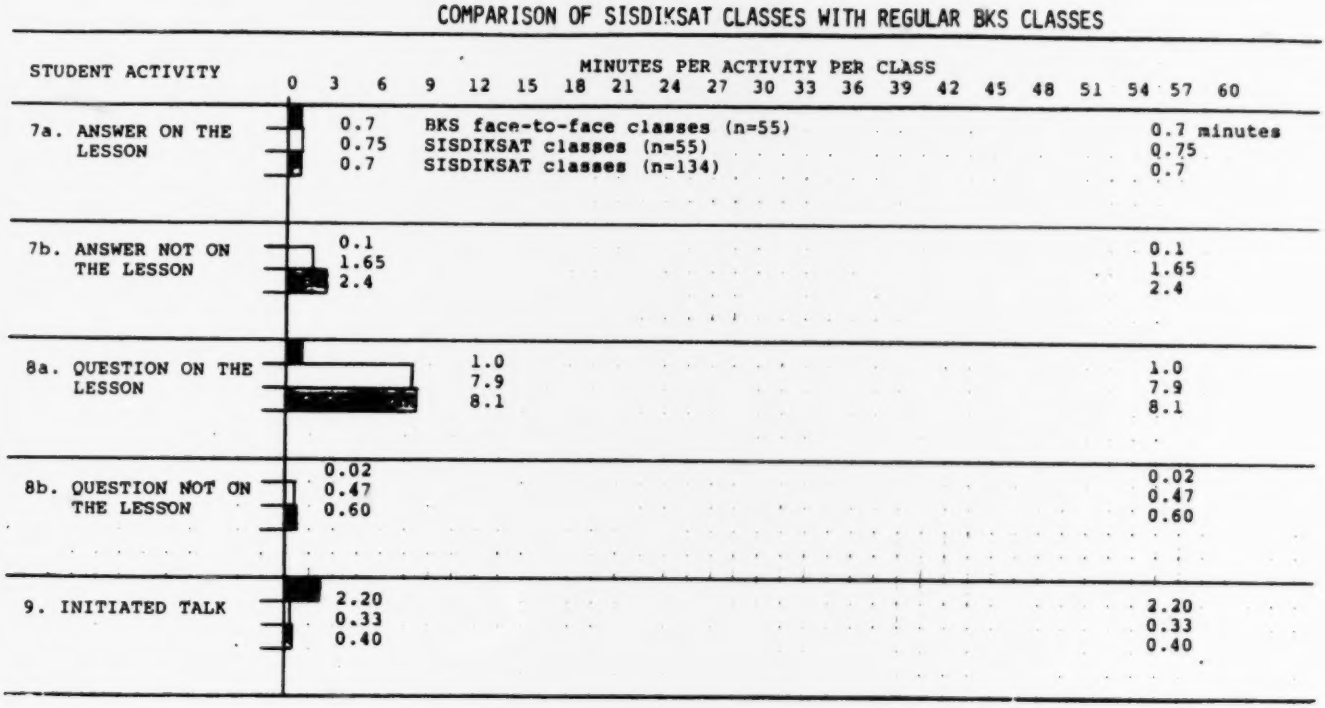
ALLOTMENT OF CLASS TIME


0 10 20 30 40 50 60 70 80 90 100 min.
AVERAGE LENGTH OF CLASS MEETINGS
65.2 min.
96.2 min.
95.1 min.
--55 regular BKS classes May 26-June 4, 1986
--55 SISDIKSAT classes April 14-May 17, 1986
-134 SISDIKSAT classes Feb. 24- May 17, 1986



STUDENT PARTICIPATION

COMPARISON OF SISDIKSAT CLASSES WITH REGULAR BKS CLASSES



THE OPERATION AND EVALUATION OF THE INSTRUCTIONAL TELEVISION SYSTEM AT ARIZONA STATE UNIVERSITY

Presented to

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Instructional Television Fixed Service

at Arizona State University

Arizona State University first offered in-plant credit courses on an experimental basis to employees of Phoenix area companies in the spring of 1982. During that semester, two engineering courses were videotaped and the tapes were delivered to six companies by a courier service.

In the fall semester of 1982, ASU began Instructional Television Fixed Service delivery by broadcasting 18 engineering and business courses to five industrial plants in metro Phoenix. Students at these remote sites received the same instruction as that presented live to up to 63 students in the newly equipped classroom studio on the ASU campus.

The system expanded, and by spring, 1985, when a fourth studio classroom was opened, courses were broadcast to twelve industrial sites and an ASU branch campus in west Phoenix. That semester, 548 students were enrolled in the 51 courses offered. During the 1986 - 87 academic year, 1155 students enrolled in the 106 ITFS courses offered at 17 industrial locations and an ASU branch campus.

In 1986, the University joined the Association for Media-based Continuing Education for Engineers. For the fall semester of 1987, the University will offer videotape courses for sale or rent through AMCEE and satellite courses via National Technological University.

System Operation

Each of the four studio classrooms is equipped with three television cameras controlled remotely by one operator. The instructors teach from a large lectern/desk furnished with two small TV monitors and a writing pad. Because the writing pad has a television camera mounted on the ceiling above it, instructors can present visual information by writing on the pad or by placing prepared materials on it. In addition to chalk and/or porcelain boards, each room has videotape, 16 mm. film and slide capability, and a loudspeaker telephone used to take calls from remote site students.

Course materials are picked up and delivered to remote classrooms daily by courier. Tests and quizzes are monitored by proctors at each remote site.

Evaluations

Five evaluations of the ITFS system have been completed. During the first academic year of operation, 1982-1983, evaluation activities included site visits and questionnaires administered to faculty and site coordinators. These data sources yielded very positive attitudes toward the system and its operation. Also during this first year, a survey was administered to assess student satisfaction with the delivery system and student grades were examined to determine the instructional effectiveness of the system.

When averaged over both semesters of the 1982-1983 academic year, no significant difference existed between grades earned by on campus students (mean = 2.98, n = 1320) and grades

earned by remote students (mean = 3.06, n = 319). Thus, it was inferred that students at remote sites were not at an academic disadvantage in comparison to their on-campus counterparts.

Student surveys administered during the first year of operation, as well as those administered in the fall of 1983 and the spring semesters of 1985 and 1986, have yielded generally favorable attitudes toward the system. For example, the 1985 and 1986 surveys were comprised of positively worded statements about various components of the system, such as "I could easily hear questions telephoned in by students." These items were rated by students on a five point scale with 1, or strongly agree representing the most positive response. Mean responses across all items were 1.92 and 2.19 for 1985 and 1986, respectively, indicating general student agreement with most items. Notable results from the 1986 survey include 91% agreement or strong agreement to a statement that the students would take another ASU ITFS course. For another item, ninety-two percent of respondents either agreed or strongly agreed that a major reason for enrolling in the class was because it was offered at their location. These results were interpreted as evidence that the ITFS system generates student enrollments that otherwise would not be available to Arizona State University.

The ITFS system was designed to assist ASU in fulfilling its mission to provide distance learning opportunities throughout metropolitan Phoenix. Results of formal evaluations as well as continuing daily positive interactions with client companies and off campus students are evidence of the system's effectiveness.

Table 1

Means from Spring 1986 ITFS Evaluation
(from ANOVA calculations)

	Companies						ASU West											
	Business		Engineering		Combined		Business		Engineering		Combined		Combined Business		Combined Engineering		Total	
	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$
Question 1	49	1.77	86	2.05	135	1.95	36	1.47	20	1.70	56	1.55	85	1.64	106	1.99	191	1.83
2	51	2.98	86	3.83	137	3.23	36	2.58	20	3.70	56	2.98	87	2.81	106	3.44	193	3.15
3	51	1.88	86	1.87	137	1.87	35	2.20	20	1.55	55	1.96	86	2.01	106	1.81	192	1.89
4	51	2.27	87	2.39	138	2.34	35	2.02	20	2.10	55	2.05	86	2.17	107	2.33	193	2.25
5	31	2.90	65	2.80	96	2.83	23	2.47	15	2.46	38	2.47	54	2.72	80	2.73	134	2.72
6	27	2.77	56	2.75	83	2.75	21	2.19	12	1.75	33	2.03	48	2.52	68	2.57	116	2.54
7	29	2.65	55	2.81	84	2.76	21	2.14	12	2.00	33	2.09	50	2.44	67	2.67	117	2.57
8	49	2.04	78	2.08	127	2.07	28	2.07	16	1.93	44	2.02	77	2.05	94	2.06	171	2.05
9	51	2.25	87	2.68	138	2.52	36	2.50	20	2.45	56	2.48	87	2.35	107	2.64	194	2.50
10	49	2.77	84	2.72	133	2.74	33	2.39	20	2.30	53	2.35	82	2.62	104	2.64	186	2.63
11	33	3.06	82	2.96	115	2.99	24	2.75	20	2.50	44	2.63	57	2.92	102	2.87	159	2.88
12	51	1.72	87	1.72	138	1.72	36	1.83	20	1.95	56	1.87	87	1.77	107	1.76	194	1.76
13	48	2.33	83	2.18	131	2.23	33	2.96	17	2.11	50	2.68	81	2.59	100	2.17	181	2.35
14	51	1.74	87	1.55	138	1.62	35	1.97	20	1.75	55	1.89	86	1.83	107	1.58	193	1.69
15	50	2.46	83	2.39	133	2.42	32	2.90	16	2.12	48	2.64	82	2.63	99	2.35	181	2.47
16	51	1.92	83	2.02	134	1.98	36	1.58	18	1.38	54	1.51	87	1.78	101	1.91	188	1.84
17	51	1.45	87	1.50	138	1.48	35	1.40	18	1.77	53	1.52	86	1.43	105	1.55	191	1.49
18	51	1.39	87	1.36	138	1.37	35	1.68	20	1.55	55	1.63	86	1.51	107	1.40	193	1.44
Overall		2.18		2.28		2.24		2.14		2.06		2.11		2.16		2.23		2.19

ITFS REMOTE SITE STUDENT SURVEY

Please complete and leave for courier pick up by April 16.

This survey is conducted by the ASU Instructional Television Office for purposes of ITFS system evaluation. Please write your company or site name and course number (e.g., Sperry I, EEE 554) in the blank space for student name. Use a number 2 pencil to darken the box below the letter on the answer sheet that most nearly indicates your opinion on each item.

Mark A for Strongly agree
Mark B for Agree
Mark C for Undecided or Neutral
Mark D for Disagree
Mark E for Strongly disagree

Please leave an item blank to indicate a "don't know" or "not applicable" response.

1. The instructor's writing on the pad or chalkboard was legible.
2. I could easily hear questions from students in the studio-classroom.
3. I could easily hear questions telephoned in by students.
4. The camera operator varied the camera shots to maximize the learning opportunity.
5. Reserve library materials were available when needed.
6. Computer terminals were available within a reasonable time.
7. Once I was at a terminal, I was easily able to get "on-line."
8. The instructor was available for telephone consultation during office hours.
9. I received printed class materials on time.
10. Tests were generally returned to me at the same time or before they were returned to students at the Tempe campus.
11. Homework was generally returned to me at the same time or before it was returned to students on the Tempe campus.
12. The audio signal was clear.
13. Telephone calls made to the instructor from my site were free from technical difficulties.
14. My classroom was generally quiet enough for me to hear my broadcast.
15. I was comfortable using the phone to call my professor during class. (Please explain on the back of your answer sheet any anxiety you had about using the phone.)
16. My site coordinator was responsive to my concerns.
17. One of the main reasons I enrolled in this class is because it was offered at this location.
18. I would take another ASU ITFS course.

Please write additional comments about the ITFS delivery system (e.g., phone, courier service) on the back of your answer sheet.

EVALUATING INTERACTIVE TELEVISION: METHODS, FINDINGS AND ISSUES

ANALYSIS BASED ON EVALUATION OF MINNESOTA'S TECHNOLOGY DEMONSTRATION PROGRAM
1983-1987

A PAPER PRESENTED TO THE THIRD ANNUAL CONFERENCE ON
TEACHING AT A DISTANCE
AUGUST, 1987

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INTRODUCTION AND BACKGROUND

For reasons well known by most educators and state policymakers, small rural school districts have been searching for alternatives which would permit greater parity with larger urban and suburban districts. In the late 1970s and early 1980s, some began to explore the use of emergent television technologies which could permit curriculum expansion, without the static, "talking head" limitations of previous uses of instructional television.

In 1983, the Minnesota Legislature authorized a variety of categorical aids, including funding for Technology Demonstration Projects, aimed at increasing uses of computers, television and other technologies. The Demonstration Projects were intended to serve as models of the uses of technology for instruction and instructional management. The fundamental underlying presumption was that the use of television and other technologies could increase the availability of educational opportunities, modernize curricula, and minimize the inequities between small, outstate and large, urban and suburban districts, thereby obviating the need for politically unpopular pairing or consolidation.

A total of nineteen TDS projects received state support between 1983 and 1987, ten of which were demonstrations of the use of interactive television (ITV).

The ITV demonstrations employed various technologies, ranging from coaxial cable to Fiber Optics and several broadcast options. Involving 58 school districts in consortia of various sizes, as well as post-secondary institutions and businesses, the sites ultimately entailed expenditures of $5.7 million.

AN EVALUATION MODEL

The evaluation model can be characterized as decision-referenced, "time-series" and "reality-based." At each of several stages during two biennial funding cycles, the process was designed to provide answers to decision-makers' questions, as appropriate to the real progress and actual implementation of distance teaching/learning technology. At the conclusion of each stage, most of which comprised no more than four months, oral and written reports were generated and circulated widely. Following each successive report, evaluative questions were refined, new questions posed and additional data gathering initated.

Also introduced was an expanded concept of meta-evaluation. A consultant was retained to provide substantive design assistance and ongoing formative comment, to provide an independent assessment of the program, and a critical review of the evaluation consistent with the Joint Committee Standards for Evaluation.

Exploratory interviews, document reviews and Case studies comprised the basic data gathering techniques of the first evaluation and program funding phases. During the second biennium, both qualitative and quantitative measures were employed at two levels: individual project evaluation and data gathering responsive to projected program wide outcomes.

FINDINGS

Implementation. Technical and essential educational planning, negotiation of sometimes complex inter-district agreements and cooperative agreements with cable franchise holders, utilities, broadcast entities and the FCC, fundraising and other factors imposed significant implementation delays. The experience of these sites would suggest that two to three years is to be anticipated.

Student Achievement. A variety of analyses and testing procedures compared student achievement in ITV courses with achievement in the same courses delivered traditionally. No consistent, statistically significant difference was evident in any of the nearly one thousand individual grades and test scores so analyzed. We concluded that the medium of television and two-or multi-way delivery of course content had no significant impact on levels of achievement.

Classroom Interaction. Extensive observational methods revealed a great deal of interaction between students and teachers in these televised deliveries. Consistent with the high representation of foreign language classes, most was taxonomically "low-level." There were no differences in levels of interaction in live (teacher present) and remote sites. Teachers' basic interaction levels appeared to be unaffected by the medium. There was, however, enormous variability among individual teachers; patterns which remained consistent whether the teacher was in a distance or conventional setting.

Student Attitude. Students, following an initial period of adjustment, expressed very favorable attitudes toward ITV classes, finding them "an interesting way to learn." They were generally

comfortable with the medium, could see and hear the teacher and each other, and talk with the teacher as often as they wished. There were no evident differences in attitude on the part of students participating in remote sites, and those in live or origination sites.

Teacher Attitude. Participating teachers also expressed generally favorable attitudes about this technology, although with certain caveats respecting participation and preparation. Teachers reported ITV systems offer several advantages including enlarged program options for students, and challenge and professional growth opportunities for themselves. Inherent disadvantages were noted, including a greater frequency of cheating, lack of personal contact with students, movement and space restrictions, occasional technical problems, delays in materials transfer, problems with the logistics of make-up work, and conflicting school calendars and daily schedules.

Teachers tended to use more visual media, allocate more time to preparation and greater effort to maintain student interest, involvement and interaction. Ingredients essential to the participation and satisfaction of teachers were participation in decision-making, adequate inservice, practice and hands-on experience with equipment, opportunities for self and peer-criticism, and ongoing support from principals and project directors.

Costs. Planning and construction costs in the ten Demonstration sites ranged from a low of $131,400 (for a cable system) to a high of $1,082,805 (for an ITFS system). Median construction costs were $589,253. Annualized operating costs ranged from a low of $36,500 to a high of $1,177,617; the median was $40,974.

Organizational Changes. Implementation of ITV affects school districts in at least three ways: one, it requires and promotes cooperation among districts; two, it permits districts to offer an enlarged curriculum; and three, it provides opportunities for expanded community and adult education. Minnesota's program has allowed, at least short term, the continued independent survival of a number of school districts which otherwise would have been forced to pair or consolidate programs. Programs virtually force districts to relinquish a degree of local autonomy, require coordinated strategic planning, and the meaningful involvement, preparation and support of teachers. For districts without a clearly articulated educational need or in which strategic planning does not occur, we concluded that ITV is an inappropriate and ineffective alternative.

Evaluating Experiential Learning for Distance Learners

by

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Overview

The notion of evaluating learning acquired outside the traditional classroom is not new. Clearly, independent study programs, including both correspondence study as well as various mediated delivery systems, have long dealt with the problems and frustrations of evaluating students' learning. These independent study programs, however, use highly structured, professionally designed and edited learning materials. The result has been that there is a great deal of control over the content and structure of the learning to be acquired. The basic core of knowledge presented in the independent study is essentially the same for every student registering. Given this common experience for each student the task of evaluation, in terms of its content, is really not that different from evaluating the knowledge of traditional classroom students.

But what of the adult student who has acquired college level learning through a variety of experiences--paid employment, volunteer projects, civic and community involvement or personal study? How do we evaluate this diverse body of experience and even more challenging, how do we do this for distance students? These are the questions which the Adult Learner Services Network faced.[1]

Resources

In order to establish an assessment of prior (experiential) learning program for distance learners in Minnesota, a number of key resources had to be put in place. The most crucial resource was for faculty--- skilled in innovative assessment techniques, committed to helping adult students receive appropriate college credit for the learning they had undertaken, and trained in working with adult distance learners. To accomplish this task, the network developed a series of training workshops delivered to small groups of faculty throughout the state at their home institutions. The objectives of these workshops were to:

1. build support for the assessment of prior learning options for adult students and dispel myths and misconceptions about the quality;

2. provide instruction in developing assessment guidelines, diagnostic tests and final evaluation instruments;

3. give feedback and support to faculty working with adult students in the assessment process;

4. disseminate information on innovative approaches to assessment including the use of media, both one way and interactive, for distance learners.

The second major resource, which flowed from the faculty training, was the establishment of a computerized data bank of assessment information for students. Every faculty member trained submitted guidelines for each subject area in which they wished to evaluate student learning. It was in the development of these guidelines that the greatest discussion and concomitant anxiety surfaced. How does one evaluate students when there is no commonality in the learning context? Since no uniform syllabus guided the learning acquisition, the task of delineating expected learning outcomes becomes crucial. The evaluation guideline becomes the list of "generic" outcomes that any student receiving credit should be able to demonstrate. They are not tied to specific textbooks, experiences, lectures, or discussions but rather form a framework of the essential knowledge and skills a student must be able to demonstrate. The guidelines address such components as:[2]

- o key factual information
- o theories, theorists, models
- o communication (style, presentation formats, vocabulary)
- o methodology
- o history/current trends
- o knowledge of assumptions
- o ethical and legal considerations
- o aesthetics and style
- o skills and abilities

While not every guideline contains all of the components, these categories encompass the major outcomes and provide a framework for faculty evaluators.

Services

Having trained faculty and accurate and accessible information is important but providing support to students acquiring college credit through assessment of prior learning is equally important. A recent article in the Journal of Distance Education states the "success for distance learners depends on the interaction of two factors (1) a comprehensive, carefully contructed curriculum and (2) specialized striving skills--energy mobilization, information management and time control."[3]

In addressing the first factor a "carefully constructed curriculum" the Adult Learner Services Network looked at providing concise and comprehensive information on expected outcomes through the computerized data bank .The guidelines developed by faculty provide the same type of information which one might find in a traditional class or independent study syllabus. They say to the student "If you have mastered these components we will grant you credit." In this way students from diverse experiences can self assess their learning against faculty defined learning outcome statements.

The second factor "specialized striving skills" was more difficult to instill. To tackle this problem the network developed a workshop and a companion workbook entitled "Educational Planning and Prior Learning Assessment." Through this process students were assisted in the task of identifying their college level learning through experience, describing and documenting the learning to be evaluated and introduced to the various kinds of testing to which their learning might be submitted. Additionally, as the title implies, the students not only learn to look at their previous learning but develop plans for their total education---present, future, as well as certifying past learning.

Use of Technology

Throughout the Adult Learner Services Network the emphasis has been on providing services to students in a manner that is convenient, cost effective and enhancing to the student's overall educational objectives. A key consideration has been not only to provide thorough and fair evaluation information for student decision making, but to assist faculty evaluators in developing testing instruments which respect the student's individual experiences within a subject area and without physically requiring the student to present herself/himself for evaluation.

To that end we are encouraging faculty who wish to develop innovative assessment models including the use of interactive T.V., videotaping of student performances, creative use of computers, and telephone interviewing. It has been said the "for distance education, the learners' needs determine the use of media."[4] For distance assessment of experiential learning it is the learners experience and the faculty's need for certain types of information which determine the use of media. Regardless of subject area, the student's experience base, or the faculty's experience in assessment, need for multiple measures and multiple approaches to measurement is paramount.

The Function of Assessment

A final note to the discussion of assessment and distance learning has to do with the basic functions assessment is intended to serve. While assessment of prior learning serves multiple functions including certifying and evaluating, the one that sadly is most often overlooked is the educative function of assessment. "A principal objective of experiential learning is to facilitate personal development of students and assessment should contribute directly to that process. This means especially helping the individual achieve a better understanding of her-or-himself in relation to the individuals own interests and aspirations and in relation to external expectations and requirements associated with the individual's goals. Assessment facilitates personal development not when it makes comparisons among individuals that may be punitive but when it helps students perceive and work toward their educational and personal objectives."[5] It is the hope of the Adult Learner Services Network that in the development of this program we can build quality "curricula" based on sound educational principles that also support and nurture adult learning wherever and whenever it occurs.

Notes

[1] Adult Learner Services Network (ALSN) is a statewide project funded by the Kellogg Foundation and administered by Metropolitan State University.

[2] Theory Seminar Handbook, Harvey, Leah and Webb, Anne, developed under a grant from the Fund for the Improvement of Post Secondary Education (FIPSE) to Metropolitan State University, 1984.

[3] The American Journal of Distance Education, Vol 1 No 1, 1987, p.14.

[4] The American Journal of Distance Education, Vol 1 No 1, 1987, p.3.

[5] Principles of Good Practice in Assessing Experiential Learning, Warren Willingham, CAEL, 1974.

Wisconsin Conference on Distance Learning
August 3, 1987
Richard W. Jonsen
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WICHE

POLICY QUESTIONS FOR STATE AND REGIONAL ACTION TO SUPPORT THE USE OF INFORMATION TECHNOLOGIES IN HIGHER EDUCATION

State Interests and Information Technologies

New state-level policies are needed that address the enormous growth in the use of information technologies in higher education and should be based on fundamental state interests in access, equity, efficient use of state resources, diversity, quality and economic development.

Access has been the principal idea driving higher education policy since World War II. States need to be concerned about equity in the use of these new learning tools and in access to them. If their use is primarily in educational activities that are required to be self-supporting, will people who cannot pay, but have learning needs and requirements equal to those who can, be denied their use?

If educational excellence demands that colleges and universities do employ the new technologies in their work, what policies now in place will insure that they are used efficiently, especially that they are used with the increasing efficiency that can be obtained by cooperative use?

Public policy has emphasized diversity in higher education through support of private higher education, the development and funding of a variety of institutional types, and direct and indirect support of private colleges and universities. State encouragement of diversity has not extended, however, to diversity in the means of instruction (although a few states have supported the development of external degrees and non-traditional institutions). But the

opportunities created by information technologies have created enormous new possibilities with respect to the means of instruction in higher education.

Some of these new technologies have applications of compelling power and attractiveness, and thus the potential for strengthening educational quality. Of itself, this does not prove that they impart learning better than traditional means. But, as technology becomes infused in all aspects of our society, educational excellence becomes the driving motivation for their use.

In the past few years economic development has become tied to the strengthening of educational systems. Telecommunications and information technologies have been seen as effective in strengthening the state's ability to provide continuing professional education to businesses that they are trying to attract, and also of being an indispensable part of training for a workforce that will contribute to economic progress.

State Structures for Implementing Policy

Although each state is different with respect to the governance of higher education, it is generally true that a single state board or agency has responsibility for the policy oversight of higher education. While the character and authority may differ among states, most have policy responsibility in several areas that have important implications for the use of telecommunications for distant learning.

The planning function at the state level usually involves consideration of the role and mission of public institutions. Telecommunications and distant learning, because of the potential they have for radically altering the service area of an institution, will be an increasingly important factor in such determinations. In addition, competition among institutions for students and resources will be greatly affected by telecommunications.

Needs assessment is a common ingredient of state planning efforts, and the need for distance learning is an obvious application of such inquiries.

The review and approval of academic programs, normally a function of statewide governing or coordinating boards, takes on a new dimension as institutions use telecommunications to "deliver" their programs to distant audiences, or develop brand-new programs based upon the technology itself.

With respect to state policies relating to budgeting and financing, current approaches to financing, particularly in public higher education, are particularly ill suited to the kind of investments that are made both in the development of large scale telecommunication and in their maintenance and operation.

As states increasingly develop methods to evaluate institutions and assess the quality of programs, performance and outcomes, the question of quality in telecommunicated instruction is bound to be an ingredient in this function.

As campuses and multi-campus systems move to develop integrated systems for networking their campuses and systems, states are bound to get interested in coordination of such networks over larger areas, to explore the possibilities of large scale integration and interconnections. This will trigger more intensive efforts to stimulate cooperation among institutions and systems in the use of telecommunications, and perhaps even at the regional level.

Actions for State Policymakers

o Identify needs that might be served by telecommunications. One clear shortcoming in planning for use of telecommunications in distance education is the absence of any systematic analysis of need. The need for such analysis could be appropriately met at the state-level through surveys of providers, potential clientele, businesses, or all of these.

- o Identify resources currently available to serve those needs.
- o Identify who is served by those resources, and what are the unmet needs.
- o More attention should be given to strengthening resources for production, to broaden the base for distribution or to effect divisions of labor through cooperation.
- o Initiate planning and coordination activities.
- o Encourage collaboration through regulation and incentives.
- o Identify opportunities for interstate cooperation. As an interstate organization, WICHE is particularly interested in the regional opportunities for the use of telecommunications in higher education, and its current work in this area is described below.

An Example of Interstate Cooperation

The western states that comprise WICHE share many demographic and educational characteristics which come together to create an environment ready for regional cooperation in the use of telecommunications for higher education. Some of those include:

- o the geographic size of the states, coupled with relatively small population;
- o the mix of educational institutions, e.g. the high percentage of students enrolled in community colleges;
- o the decline in basic industries (timber, energy, agriculture) and need for diversification.

WICHE was created in the 1950's for the purpose of helping states to share their programs and other resources to meet common educational needs. Today throughout the region common priorities include providing advanced science, engineering, business and technical training needed by industry, and providing

educational opportunities to high school and adult students in rural areas.

Recently, nearly every state in the western region has started to study, plan, or build educational telecommunications delivery networks. When one considers the time and the costs that go into producing high-quality educational programs, when one looks at the huge investments that institutions and states will make in building telecommunications systems that have the capability of extending beyond their service area to new educational markets, the potential savings in cost and efficiency that could be achieved through regional cooperation are obvious and enormous.

WICHE is working with its 14 member states to assess the feasibility of and interest in establishing a western regional telecommunications cooperative. Modeled after the successful Utah State Telecommunications Cooperative, the purpose of the cooperative is to provide for the regional sharing of resources in the use and application of telecommunications in higher education.

Its objectives would be to: (1) share human resources by networking experts in the technology and in the development of educational uses, and (2) develop cooperative activities, for both the shared use of telecommunications, and the shared production and distribution of telecommunicated educational activities. The cooperative would be designed to (1) be self-directed and eventually self-supporting, (2) have open and voluntary membership to all of higher education, plus K-12 and other state government agencies, and (3) be flexible, allowing members to develop and participate in programs as they choose.

As a first step, WICHE will hold state-level discussions during 1987-88 to assess the feasibility of such a cooperative and to develop program priorities.

DEVELOPING A PUBLIC POLICY ON DISTANCE LEARNING AND INFORMATION TECHNOLOGY: A CHECKLIST OF ISSUES

presentation by

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Minnesota Higher Education Coordinating Board

BACKGROUND

With the use of computers, audio and video technology, and telecommunications, post-secondary instruction can be provided in remote locations to individual or groups of students without students and faculty being together in a classroom. The use of new technologies has significant implications for the nature, quality, and accessibility of post-secondary education and for state policy regarding the funding and regulation of distance learning.

In Minnesota, a primary state goal is to assure that education is available where it is needed. It is viewed as a right of residents who are able to do post-secondary level work, a necessary underpinning for economic development, and one aspect of a high quality of life. Consequently, Minnesota state policy toward electronic technology and distance learning must be considered in the light of how it helps achieve this goal.

During the 1987 Legislative Session in Minnesota, each public post-secondary system requested appropriations to develop further their telecommunications capabilities for providing learning at a distance. The following checklist of issues was developed to stimulate thinking about

public policy regarding distance learning and electronic technology.

CHECKLIST OF ISSUES

1. How will electronic technology and distance learning increase access to post-secondary education? Will distance learning offerings compete with campus-based programs for the same pool of students?

2. In what circumstances will people take advantage of distance learning through electronic technologies? Are these circumstances appropriate for public funding?

3. Is distance learning through electronic technology a cost efficient means of providing instruction?

4. At the time of the initial capital investment, is there a plan to finance operating and replacement costs?

5. Are current funding formulas appropriate for information technologies and distance learning?

6. Are there systems in place for coordinating the purchase and sharing of software and courseware within and between institutions and systems?

7. Is there enough quality courseware and software available to assure the effective use of electronic instruction? If not, will funding and personnel policies support the creation of new courseware and

software?

8. Do personnel and funding policies encourage faculty and staff to support distance learning courses and programs?

9. How can the state respond effectively to changes in telecommunications regulation?

10. Are state regulatory standards and procedures for private and out-of-state institutions adequate to assure that all distance learning activities meet appropriate standards?

11. Should the state establish standards and procedures regarding distance learning using information technologies for both state-supported and private institutions?

12. Should state policies encourage all types of institutions, regardless of state of origin, to provide distance learning through electronic technology, or should in-state institutions be protected from out-of-state competition?

13. Should the state develop differentiated missions for public post-secondary institutions regarding the development and delivery of distance learning through electronic technologies?

14. Should the state commit itself to offering of a range of courses and programs through distance learning?

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Is There An Audience for Evaluation of Distance Education?

Actually there are many audiences for the results of evaluations of distance education. Funders, decision makers, project staff, learners and educators all want to know if the distance education program was as good as (or better than) one delivered through more traditional modes. Based on the experiences of the Telecommunications Development Center, this paper identifies several audiences and their key issues, then suggests some workable approaches to dealing with evaluation.

The Telecommunications Development Center (TDC) was established by the Minnesota Extension Service in 1985 with a 1.89 million dollar grant from the W.K. Kellogg Foundation. The Center's mission is to encourage effective use of new and emerging technologies for outreach education. Special emphasis is placed on meeting the needs of rural residents with non-credit education. Unlike other technology-intensive projects (funded by Kellogg and others), the focus of the Center's activities is not on acquiring and installing hardware but on improving and supporting extension's capability to use technologies in an educationally sound and effective way.

TDC activities support two broad goals: faculty development and organizational capacity building. Specific activities toward achieving the first goal include workshops, seminars, individual tutorials and a Techlab. Toward the second goal, we work on policy development and identify and secure resources. Both goals are fostered through consultations, publications and demonstration projects. The information in this paper is based on our evaluation experiences with eight projects begun in 1986 and seven started this year as well as the Center's ongoing, formative evaluation.

In general, projects were selected based on a combination of factors, such as: potential for faculty development, effective use of technology, opportunity for significant impacts on audiences or the organization, and potential to continue beyond the demonstration period. (Brief descriptions of projects are available from the author.)

Three levels, or types, of evaluation have been identified; each is examined in turn. On one level is the Center itself. At this level, the three audiences for the evaluation are staff, administrators in extension and the university, and funders or potential funders including the legislature. Staff wants to know if the Center is doing the appropriate things well enough to succeed and if changes should be considered. The TDC staff also wants to know if anyone knows or cares.

Administrators are concerned with impacts on the system, costs vs. benefits, and practical and political implications. They also ask if the Center "makes sense" -- structurally, financially, and as expected. Funders, often viewed as the primary audience for evaluations, also want to know about costs and benefits in addition to achievement of goals, implications for other systems, desirability of providing future funding and potential for financial self sufficiency.

On a second level are the audiences for evaluation of individual demonstration projects. These audiences include: project staff, Center staff, learners, peers and colleagues, administrators and technology providers. Often their first question is "how does this delivery method compare to what was used previously." Is it as effective (or more so)? Easy to use? Attractive to learners? More (or less) expensive? Colleagues in the field of education ask "should I try it" and "what will I need in order to do so."

On a third level audiences want to know about the technologies themselves. To some extent, all the audiences identified above share in a desire for this kind of evaluation. We want to know if the technology actually worked, if it was educationally effective and in what situations, if there were specific factors which made it more (or less) successful; in short, if it's worth trying.

Considering what is working (and what isn't) for the Telecommunications Development Center, the following approaches should be considered.

1. Identify stakeholders (audiences) and involve at least the primary ones in shaping the evaluation.
2. Think "evaluation" first, last and often.
3. Clearly specify the roles and responsibilities of <u>all</u> parties involved in the evaluation (staff, consultants, learners etc.).
4. Select appropriate evaluation methods, but be flexible enough to add to or change them.
5. Refuse to get trapped into making judgments before the data are in.
6. Remember that not all evalutaion results are found in reports labelled as such. Use all the data available to you and credible with your audience(s).

EVALUATION OF TEACHING/LEARNING AT A DISTANCE

August 3-6, 1987
Madison, Wisconsin

Larry Lienau, District Administrator
School District of Alma Center-Humbird-Merrillan
715/964-8271

In rural Trempealeau County and portions of Jackson County, where cows outnumber people two to one, and there is not a traffic light to be found, Western Wisconsin Communications Cooperative (WWCC) operates one of the most innovative cable systems in the country.

Rural school districts were finding it increasingly difficult to provide educational opportunities comparable to the larger and urban institutions. Enrollment of districts in this rural area range from 270 to 1521, K-12. The nine K-12 school districts are now also connected to WWTI, the Western Wisconsin Technical Institute located in LaCrosse, Wisconsin. Courses are being offered by the technical school to high school students and adults alike. Among the offerings were, blueprint reading, photography, chemistry concepts, microbiology concepts and physics concepts.

Approximately ten years ago WWCC was the first rural cable system to develop a two-way instructional delivery system for the public school. This is a cooperative, user-owned cable company with a commitment to not only serve home subscribers, but also to build and maintain an interactive educational system combining microwave and cable.

The interactive system accomplished a great deal for the schools, allowing sharing of staff and students, while expanding curriculum. Courses available have been, Spanish I, II, German I, II, French I, II, shorthand, digital electronics, advanced computers and advanced mathematics. The foreign language will expand as students progress through the sequence.

Each school has a studio in which they can both broadcast and receive. Recently a DCI (data/call interface) was added. This provides opportunities to call between schools and also send and receive computer based programs and data. Electronic mail is a reality.

The system will never replace the classroom teacher, and this was never the intent. However, it does appear to be the next best thing to being there. After eight years of full-time operation, we are convinced the interactive classroom is an effective mode of education.

A recent survey of the students and staff at the nine participating schools, completed at the end of the 1987 school year yielded some valuable information. Following are some of the findings:

Staff

73% of the teachers feel they are only slightly to somewhat knowledgeable of the use of the system.

Although 48% indicated the courses were of value, 50% felt they were of slight value or none (27%).

Only 17% of the teachers frequently encouraged students to use the cable television.

Overall, teachers felt that approximately 33% of the potential use is being realized.

44% definitely would not want to teach via two-way, 14% would, and 38% not sure.

Staff members perceived that the factors discouraging students from enrolling were, students were not self directed and the difficulty of scheduling.

Students Not Involved in Cable Courses
143 Students Surveyed

(1) Strongly Disagree
(2) Disagree
(3) Undecided
(4) Agree
(5) Strongly Disagree

Reasons for Not Enrolling	Total Mdn.
I was not interested in any of the courses offered on Cable TV	2.3
The Cable TV courses offered did not fit into my class schedule	2.2
I was not aware of the courses offered on Cable TV when I made out my class schedule	1.5
I prefer to take a regular course at our school	2.8
Students who have taken a course by Cable TV discouraged me from taking one	1.3
I have found it difficult to get a high grade in Cable TV courses	1.3
Students in Cable TV courses have to work on their own too much	1.5
I was discouraged by a principal or teacher	1.2

Students Enrolled in Courses Via TV
1216 Students

(1) Important
(2) Slightly Important
(3) Moderate
(4) Important
(5) Very Important

Comments on Cable TV Courses	
Cable TV teachers get to know their students	3.4
There are adequate opportunities to talk with other students in Cable TV classes	2.3
Students have opportunities to ask questions of the teacher	4.1
It is more difficult to catch up on make up work in a Cable TV Course (Compare with your regular courses)	3.6
The amount of information given in a lesson on Cable TV is usually about right for the speed at which I learn	3.5
The content of Cable TV lessons is usually interesting	3.5
I look forward to going to class sessions that use Cable TV	3.4
I receive enough information on my work, papers and tests from Cable TV teachers	3.7
I learned a lot in my Cable TV classes	3.7
The Cable TV lessons were usually well planned	3.8
It was a problem to fit a Cable TV class into my schedule	2.1
I was usually able to keep up with what the instructor was presenting in Cable TV lessons	3.9
The grading for my Cable TV course(s) was fair	4.1

(The study was just recently concluded and has not yet been fully analyzed).

Project CIRCUIT

Curriculum Improvement Resulting from the Utilization of Instructional Two-Way Television

Participating schools are Alma Center-Humbird-Merrillan, Arcadia, Blair, Eleva-Strum, Gale Ettrick Trempealeau, Independence, Osseo-Fairchild, and Whitehall.

For further information contact: Coordinator
Project CIRCUIT Office
Alma Center School District
Alma Center, WI 54611

VARIABLES AFFECTING ADULT LEARNING IN A DISTANCE EDUCATION SETTING

by

Robert Fellenz, Constance Blackwood, Alan Seamons

This study sought to identify variables that affected the learning of adults engaged in a distance education program. The population for the study consisted of 15 learners at three different distance education sites. All sites were part of the COMNET distance education system originating at Utah State University in Logan, Utah. Each participant was interviewed for a minimum of 45 minutes by a member of the staff of the Kellogg Center for Adult Learning Research, Montana State University. When possible, the interviews were audio recorded. Meaningful quotations were selected from the interviews and a dBASE system was used to sort these data into categories for analysis.

Eight factors were identified as having a significant impact on the learning of the distance education participants. These factors were: the setting in which the instruction took place, the instructor, the use made of the media, the motivation of the learner, the interaction among peer learners, the learning style of the individual, individual time commitments, and the personal development of the learner. Each of these factors will be examined briefly below.

The Utah State University continuing education system has more than a dozen sites throughout the state in which off-campus instruction is delivered. The fact that the interviewed learners gathered together at such sites, that there was an administrator to promote not only the COMNET system but also other methods for delivery of education, that each site had a teacher aide present during all program delivery, and that participants could expect a somewhat continuous program of courses did affect how individuals learned. Specifically, the sites provided options for the individual learners; they could study with others, receive counseling, use the site's audio tapes for review, and identify with a system rather than rely on self exclusively.

The instructor, however, was credited with having the greatest effect on learning. The feeling of most interviewees was reflected in this statement: "If I can choose between taking a class in a traditional way or on COMNET, my first question is 'Who is the professor?' I'll take the good professor every time whether it's live or COMNET." Characteristics of the good professor frequently mentioned were an awareness of how to use effectively the delivery system, ability to give practical application to the content, willingness to help individual students, and, of course, an interesting, organized, involving approach to teaching. Because the COMNET system relies heavily on oral communication, both the learner and instructor must make effective use of this learning modality.

The media available did not affect the learning of the adults as much as the way in which the available media was used. For example, there was general consensus that two-way audio was the

most vital component in the system. Some used it to get their questions--or the questions of others--answered and in the process improved their question posing skills. Others were too frightened to use the system. Some instructors provided visual clarification through the electronic board; others distracted learners with their scribbling. Some learners yearned for color and full motion TV; others were sure it would be more distracting than slow scan.

The motivation and specific goal sets of the learners had a very significant impact on the learning that occurred. The need or desire for certification was so overwhelming that it was difficult for many participants to distinguish between what they learned and what they did to pass the course. As several admitted, they would "endure" anything to pass the course. However, many of these same people were hungry for knowledge that would improve their job performance or help them grow as individuals. Moving the instructional delivery beyond the knowledge level to application, synthesis, or evaluation stimulated their learning.

Another major impact on learning was the amount and level of interaction among the peer learners at a site. The interchange in some groups was so intense that the teacher was given only secondary attention. Many admitted that they had come to rely on fellow classmates for feedback and practical application of knowledge. Others had an entirely different learning experience. They sat at their desk with their text or syllabus at their side and made notes of everything significant they read or heard from the professor. Peer learners were viewed only as distractions.

The cognitive styles and learning preferences of individuals also affected their learning. In fact, most of the interviewees talked about their "style of learning" and how it influenced their study. It was easy to recognize the audio, the visual, the kinesthetic, the global, and the analytical learner. Most had found at least some ways of coping with the system.

Convenient time and location were frequently mentioned as factors for engaging in distance education. However, the individual's personal commitment of time to the learning activity was a less obvious but nevertheless distinct influence on how that person learned. Some saw the class as a time to meet social needs; they could use tapes of the sessions later for study purposes. For others class time was their major time for study.

Participants were quite definite in stating their belief that personality factors did affect their learning. They were not in agreement whether behavior in the learning situation reflected their stage of personal development or whether the educational experience promoted self-growth. However, it was clear that there were fewer external control factors present in the COMNET program than in traditional settings. Self-initiative, autonomy, and a rich background of experience were important aids in learning through a distance education approach.

UTAH STATE UNIVERSITY

THE INFLUENCE OF TEACHING STYLE AND INSTRUCTIONAL DEVICE USE ON STUDENT SATISFACTION AND STUDENT PREFERENCE IN ELECTRONIC DISTANCE EDUCATIONAL (EDE) METHODS

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Over the last 100 years, the traditional face-to-face method has been the state of the art in delivering instruction to individuals. With the advent of new electronic communications devices and emergent Electronic Distance Educational (EDE) methods, questions of instructional quality, presentation, and delivery must be asked.

The purpose of this study was to gain insight into this emerging field of electronic distance education so as to improve and enhance the delivery of educational programs utilizing EDE. The study was conducted at Utah State University, using an EDE-method (COM-NET) as the research setting. Thirty-seven instructors taught 45 courses over the COM-NET system from Fall quarter 1985 through Summer quarter 1986.

The design of this study was based upon simple correlation coefficient matrices and the subsequent prediction models of multiple regression analysis. Contextual data were gathered from a solicited instructor self-reporting instrument. The objective was to identify potential relationships between teaching styles (Concrete/Sequential, Concrete/Random, Abstract/Sequential, Abstract/Random) and instructional utilities (Discovery--Expository/Techniques, and Abstract--Concrete/Device induced experiences) employed on student satisfaction and student performance in an EDE-based learning system. Teaching style data were gathered using the Gregorc Style Delineator (GSD). Instructional utilities data were gathered using the Instructional Utilities Inventory (IUI). Student satisfaction was

measured using the USU course evaluation form and student performance assessments were made by using mean grades for those courses taught via COM-NET during the time period of concern in this study.

The following descriptive statistics emerged from the analysis of the courses taught. Of note was a mean student satisfaction score of 3.27 for all COM-NET courses studied as compared to a mean on-campus student satisfaction score of 3.5 for the same period. The student satisfaction score was a measure of students' agreement with the statements, descriptive of quality courses, as stated on the standard USU course evaluation form. The 3.27 score indicated a mean rating of "agree" to "strongly agree" with the course evaluation form statements, suggesting that the COM-NET courses had been successful. A mean 3.04 grade point average (GPA) was earned by students who were in the COM-NET courses studied. During the same time period a mean GPA of 3.14 was earned by students in on-campus courses.

There were six hypotheses tested in this study. The results were varied and although no cause-effect relationships were determined due to the correlational nature of the study, certain tendencies did exist. Hypothesis one, that teaching style had no effect on student satisfaction, was rejected. The Abstract/Random (AR) teaching style covaried slightly in a positive direction with student satisfaction predicting 11.6 percent of the relationship. Hypothesis two, that teaching style had no effect on student performance, was not rejected. Hypothesis three, that instructional utilities had no effect on student satisfaction, was not rejected. Hypothesis four, that instructional utilities have no relationship with student performance, was rejected. Discovery techniques explained 26.4 percent of the variable satisfaction. Hypothesis five, that teaching style had no

effect on instructional technique employed, was rejected. The Abstract/Random (AR) teaching style predicted 12.7 percent of the variability of discovery techniques. Hypothesis six, that teaching styles had no effect on the instructional devices utilized, was also rejected. The Abstract/Sequential (AS) teaching style covaried with abstract devices in a slight to moderate magnitude predicting 17.5 percent of the variability.

Through the instructor self-reporting procedure the importance of instructional presentation and course redesign in EDE delivery was stressed. Insufficient on-campus administrative support with regard to time and materials for course redesign was identified as the major deterrent to course success. The lack of student participation also surfaced as a concern of instructors. The general chronological age and experiential maturity of the students were believed to contribute to course success. Devices make the distance delivery of the instruction possible; yet the human element of the system was emphasized as the crucial determinant for success. The interactive devices of audio, facsimile machines, and writing boards were considered essential items for EDE networks. Motion video was recommended for the presentation of motion pictures.

This study classified communication hardware as devices, in that they do not teach in and of themselves. It is the interaction of the human element with these devices which created sound educational methods. The development of a solid infrastructure with which to support the chosen devices becomes a mandate for those who plan to implement EDE methods. It was concluded that instructional presentations have a significant effect on student outcomes.

CHANGE TRIGGERED BY COMPUTER TECHNOLOGY: ITS IMPLICATIONS FOR FACULTY DEVELOPMENT

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Overview

This study explains the phenomenon of change initiated by the introduction of computer technology using a university setting by ascertaining via a questionnaire and interviews the insights, experiences, and observation of faculty members who use and do not use computers in their faculty role.

Study Objectives

The study was designed to answer the Following questions:

1. To what extent does adoption of computer technology exist amoung faculty members?
2. What is the relationship between the use of computer technology and the academic discipline areas at the University of Wisconsin-Stevens Point?
3. Which of the following characteristics are associated with computer usage among university faculty members: age, capacity, compatibility, gender, linkage, openness, ownership, proximity, rewards?
4. Which individual and institutional factors best predict computer usage among faculty members?

Association between computer usage and the following variables were explored: gender, age, academic discipline, openness, capacity, compatibility, linkage, ownership, proximity, and rewards. The first phase of the study identified the correlates associated with adoption by individuals who used computer technology in their work, and those who resisted its use.

Lindquist's comprehensive Adaptive Development Model formulates the basic conceptual background for investigating the personal characteristics and the organizational constraints which either support or hinder the adoption of computer technology as an innovative change process. Lindquist's model is described along with case studies of various Universities who were undergoing innovation either in the academic or management areas in his book, Strategies For Change (1978).

Study Sample and Research Design

The study was conducted in two phases. Phase I utilized a survey questionnaire to quantify the data and to identify the best predictor variables associated with computer usage. Phase II used semi-structured interviews (N=24) to measure the two predictor variables--ownership and rewards--and to substantiate the data collected in phase I. Phase II also added anecdotal qualitative materials to enrich the findings as to why faculty members perceived computers to be either beneficial or not in assisting them in their faculty role.

The population surveyed consisted of full-time teaching faculty and full-time academic staff (only those who were directly related to supporting academic instruction) at the University of Wisconsin-Steven Point during the academic year 1985-86. Four hundred and forty-four questionnaires were mailed to faculty members . A total of 395 questionnaires were returned (88% return) and used for the sample to analyze the four research questions listed above.

Data analysis for Phase I of the study was performed by a computer by using the Pearson correlation, t-test, stepwise regression and frequency tabulations to answer the research questions. A .01 level of significance was used as the criteria to test the research questions.

For Phase II interviews were conducted for collecting the qualitative data. Twenty-four faculty members were selected using 6 categories of discrete criteria. All interviews were conducted by the researcher and were tape-recorded. The transcribed typed interviews were coded and the various coded phrases, quotes, and concepts were displayed in appropriate matrices and analyzed using methods prescribed by Miles and Huberman in their book Qualitative Data Analysis (1986).

Study Results

When the quantitative data was analyzed the following was noted: Of the 295 faculty members reporting using computers from 0 to 50 hours per week, the mean average of computer usage was 7.8 hours per week. The computer activity that consumed the most hours per week was word processing, mean hours 3.22. The cross tabulation between the number of computer hours reported and the individual's academic discipline area revealed that the highest percentage of usage was in the Humanities. This was a surprize, considering that

most people believe that most of the computer usage is in the sciences! The stepwise multiple regression procedure using sixteen operational predictor variables determined that the conceptual variables compatibility (one's attitudes toward computers), capacity (one's intellect or ability to acquire resources), and linkage (linkage to others or outside resources) accounted for 36% of the variance in predicting computer usage.

The interview data collected strongly supported the relationship between one's attitudes toward computers and one's usage of computers, which was predicted by the quantitative data. The interview data also revealed that linkage with peer colleagues and access to computers were the other two independent variables which appeared to encourage adoption.

The combining of both qualitative and quantitative data made the research process of this study most interesting. The qualitative data provided rich commentary and triangualtion. The interview data allowed the faculty members to give their perceptions of WHY they were using computers, and allowed individuals to express their fears and recommendations about computer technology. While the quantitative data revealed WHAT was actually occuring as to computer usage at this particular University.

Finally, in terms of innovation implementation, managers of change, faculty, and administrators need to recognize that the problem is highly complex due to the nature of the technology itself, its cost and speed of evolution. They need to recognize how it changes the learning process, and how it often conflicts with traditional values and attitudes. Although change may be tumultuous and computer adoption complex, this study provided some valuable insights into innovation adoption, specifically computer technology adoption. The study findings supported those strategies of Adaptive Development recommended by Lindquist in his adaptive model espoused in his book, Strategies For Change, and provides some guidelines and recommendations to other Adult Educators and Administrators in Higher Education institutions who are undergoing computer implementation and transition.

PROLOGUE: A SKILLS ASSESSMENT STRATEGY FOR DISTANCE LEARNING

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Summary of presentation for Third Annual Conference on Teaching at a Distance, University of Wisconsin at Madison, August 3-6, 1987.

The increasing enrollment of adults in college studies has been a catalyst for new approaches and new curriculum planning in order to effectively serve a student population that is predominantly over 30 and already engaged in adult life and work. During the past decade, distance-education has emerged world-wide in response to the changes in numbers and circumstances of the students to be served. Adult students are able and willing, indeed even eager, to take an active role in planning their individual programs of study. However, such students usually demonstrate complex patterns of achievement and untapped potential, which are far more elaborated and ramified than that of the incoming freshman or even graduating senior of traditional college age, and which cannot be effectively and accurately evaluated for placement by means of standardized tests. Testing circumstances and format are unsuitable for distance learning; moreover, many of them resist and resent such testing.

Getting a clear picture of the adult student's profile of achievements is one of the first tasks confronting the matriculating student and his or her academic advisor and course tutors. The distance-learning mode, in the absence of classroom or other regular meetings with students, presents special challenges for the early and effective assessment of skills and for the continuing tracking of skills development. The exchange of information between student and advisor, between student and course tutor, and between tutors and advisors, and the careful design of distance-learning course materials, are especially critical in determining the quality of each student's learning experience.

During the past two years we have begun work on an early skills assessment process for our adult distance-learners, with initial support from a small grant from the SUNY Research Foundation Program for the Improvement of Undergraduate Instruction. We began with a series of letters exchanged between advisor and new student, as a kind of extended orientation leading into the process of planning an individualized degree program. This led us to an extensive revision of our Educational Planning Course Guide and the development of a Workbook with a series of exercises which continue this dialog between student and advisor. This process and these materials are used to assess skill levels, identify areas for further development, and plan how each

student will further develop abilities in such areas as effective communication, critical reading, observation, and thinking, search and use of information.

Preliminary feedback from students and our experience so far have convinced us that we are moving in a promising direction and should continue our development. We envision five major interrelated elements in this comprehensive system of assessment, advisement and development:

1. Developing and using effective skills-assessment instruments and activities, appropriate to the adult distance-learner;

2. Using skills as a major element to guide the planning and design of the student's individual degree program plan;

3. Using skills as an important informing framework for course and curriculum development at the Center;

4. Developing small "modules" that can be used flexibly by the student and advisor or tutor for specific kinds of skills development;

5. Developing an effective information system which tracks the individual student's progress on skills development.

In summary, we believe that the deliberate and careful focus on academic and intellectual skills can serve as a key element to provide coherence and integration to a student's educational experience. It can provide both faculty and students a useful framework for relating and integrating the liberal and the professional, the theory and the practice. By directing the student to discover relationships with the real world of their work and lives, it can build motivation and increase student involvement in the planning and pursuit of their education. Finally, all of this feeds back into the system to provide a driving force and clearer direction for overall curriculum design and planning at the Center.

This presentation will outline our strategy and experience so far, and will give an overview of the structure and operation of the Center to provide the context for this developmental effort.

Presentation Abstract
New Student Orientation Workshop--Getting the Distant Learning Student Off to a Good Start

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The University of Wisconsin Platteville's Extended Degree Program has been offering the on-campus bachelor of science degree in business administration in an extended mode since 1979. The course delivery system is based upon independent study guided by regular on-campus faculty. Student success in this type of program depends to a great extent on getting the newly enrolled student off to a good start. The Extended Degree Program offers an orientation workshop to new students as one means of ensuring a good start. The purpose of the orientation workshop is two-fold--to acquaint the student with program policies and procedures, and to discuss the types of problems students in an independent study program encounter and to recommend solutions. The orientation workshop is based on the program student handbook. A consequence of the orientation workshop as well as other efforts is a fall in the Program's drop-out rate from 60% to 50% or less.

The student is offered several options for fulfilling the attendance at an orientation workshop. The first option is the presentation of the workshop twice a year via the state-wide University of Wisconsin Extension teleconference network. A version of this option is a twice yearly utilization of Extension's mechanism for connecting up to twenty telephones state-wide in a conference call. In both cases, the staff member or members participating

broadcast from campus. A final option is the presentation of orientation workshops twice a year in the two major centers of student concentration.

The stress during the orientation workshop is on the student assuming responsibility for his/her education as well as on the student taking charge of his/her education. Some considerable time is spent on reviewing the requirements for the degree emphasizing that the student is responsible for making certain that the degree requirements are met. It is suggested that the student keep track of his/her progress, checking off each degree requirement as it is satisfied.

Some time is also spent on the mechanics of the Program including enrollment forms, billing statements, financial aid, deferment of a student loan, starting a new course, choosing an examination proctor, ordering course examinations and course textbooks, as well as enrolling in a new set of courses. Much emphasis is placed upon communication with one's academic advisor in particular but also with the Program's Faculty/Student Coordinator whose job it is to send out course materials and examinations and generally to facilitate learning.

The final emphasis of the orientation workshop is on goal setting and time management. Usually this discussion brings to light that individuals are having specific problems. The staff member leading the workshop usually makes suggestions as to remedies and attending students will often comment on what works for them. Problems range from not having enough time to study to being enrolled in a course which is so disagreeable that the student finds it nearly impossible to pick up the textbook. Often there are students who are afraid to take the first examination for fear of failure or concern that they do not know everything.

The intent of the goal setting/time management part of the orientation workshop is to get those students having problems off dead center. It is crucial early in the first enrollment that the new student not establish habits that make it nearly impossible for him or her to be successful. Usually after an orientation workshop there is a flurry of telephone calls to the Program office as the students make the effort to get their studies rolling.

The orientation workshop appears to be a good device for getting the newly enrolled student off to a good start. The orientation workshop is a follow-up to the academic advising the student initially received but it goes far beyond mere advising. The workshop also makes advising easier. Above all, the attention given to the newly enrolled student aids significantly in student retention, reducing student development efforts and monies.

Faculty Training for Teaching Via Technology

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It is generally accepted that teaching via technology is different than teaching face-to-face (Monson, 1978; Boone and Bassett, 1983; Shaeffer and Griffin, 1986). Due to this difference many institutions who utilize technology for the delivery of credit and non-credit programming have established training programs for faculty who will be teaching via technology (Boone and Bassett, 1983; Hancock, Chute, & Raszkowski, 1983; Weaver, 1982; Kipper and Shaeffer, 1987). The rationale for training programs includes several reasons, such as: faculty request it; faculty may avoid using the equipment without training; faculty may more readily adopt the process if its introduction is accompanied by effective training; and the technology is only as effective as its users (Boone & Bassett, 1983, p. 333).

An issue for most institutions utilizing technology is determining the type of training that may be necessary for their faculty as they prepare to teach via technology. In an effort to examine this issue we 1) reviewed literature that described training programs at other institutions; 2) asked selected faculty members at our institutions their perceptions concerning training for teaching via technology; and 3) drew implications about general training programs for faculty who teach via technology based upon the literature review and faculty comments.

Training Programs. Programs to prepare faculty to teach via technology vary in their design as shown in the following examples. One training program for the delivery of continuing medical education programs utilizes a three phase approach (Hancock, Chute, & Raszkowski, 1983). The first phase introduces participants to the system by showing how teleconferencing can be used to meet their needs and how to incorporate specific design techniques into their presentations. In the second phase participants work in small groups to develop their presentations. The final phase takes place three weeks later with each participant giving their presentation via audio teleconferencing (Hancock, Chute, & Raszkowski, 1983).

A second program uses a five step process (Kipper & Shaeffer, 1987). These steps include: 1) recruitment of successful face-to-face teachers; 2) a pre-course discussion with the coordinator of the system giving "the faculty member ....an opportunity to discuss his/her perceptions of the the design of the course"; 3) a seminar/workshop for all faculty teaching via teleconferencing giving faculty an opportunity to utilize the teleconferencing equipment; 4) providing faculty assistance as they teach the course; and, 5) a final course evaluation providing what will be useful to them as they prepare for other teleconferencing courses.

Another training program preparing faculty to use television and audio teleconferencing consists of a two-day workshop (Weaver, 1982). The first day of the workshop introduces

faculty to individuals with whom they will work in the production of courses and explores with faculty other issues such as instructional design, performance considerations, and a demonstration of the system. The second day of the workshop provides faculty with hands-on experiences in actual presentations and critiques of these presentations (Weaver, 1982).

Faculty training programs for utilizing computers for instruction (Jelden & Brown, 1983; Cates, 1987) address areas similar to those described above. In addition, areas unique to the use of computers are: 1) characteristics of Computer Based Education; 2) languages available for the instructional program; and, 3) guidelines for royalties and authorship rights (Jelden & Brown, 1983). One institution addressed these issues with an Instructional Development (ID) Workshop and Mini-workshops (Cates, 1987, p. 67). ID Workshops address primarily technology related issues and mini-workshops are offered "in response to requests or to head off a lot of individual requests for help with a common problem" (Cates, 1987, p. 68).

Faculty Perspective. To augment information about faculty training from the literature, selected faculty at our institutions were asked about several issues related to training. For example, they were asked how long a training program they would be willing to attend; what presenters they would most like to hear from; and in what information they are most interested.

Most respondents, given the options of a 1/2 day, one-day, two-day workshop or a week-long institute, indicated they would be willing to attend a two-day workshop. Within this workshop most respondents felt they would like to hear from colleagues who have had experience teaching via telecommunications. Some of them also mentioned they would like to receive a student's perspective concerning his/her experience having taken a course via technology.

In terms of the content of the workshop, faculty seem most interested in the "how to" issues when teaching via technology. They indicated they would like further information concerning: research about successful teaching techniques when using technology; hands-on experience with the equipment; and, discussion of instructional design issues for courses delivered via technology. Less interest was expressed in research about the effectiveness of courses delivered via technology and explanations of how to use the equipment.

Conclusions and Implications. Based on comments from faculty, training programs for faculty who will teach via technology may: 1) be as long as two days; 2) have as presenters those who are experts in the field of communication, experienced faculty members (peers), and students who have taken courses via technology; and, 3) information addressed within the workshop should concentrate on the "how to" issues, i.e., the preparation of material and teaching methods for delivery via technology.

By and large, training programs found in the literature seem to follow this outline. Each of the training programs contained four components. These components included an introduction to the technology describing how the technology can meet the needs of the faculty member and a description of how the technology works. Secondly, training programs provided faculty with hands-on experiences with the technology. These first two components can be utilized to reduce the

anxiety of faculty.

The third component in these programs is providing faculty an opportunity to practice. Practicing may include a "dry-run" on the system, the video taping of a presentation, or the actual designing of a class session to be delivered via technology. The fourth component of these training programs is providing support for faculty as they proceed through the experience of teaching via technology. Training programs often provide "coaching" for faculty while they are teaching.

In summary, not all of the training programs fulfilled each of the above components in the same manner. Each program, however, addressed each of the components in a way that was congruent with the staff and financial resources at the institution. Therefore, we suggest, in the development of training programs for faculty, that institutions attempt to include the four components mentioned above and to address them in a way that best fits the goals and resources of the institution.

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MULTI-MEDIA APPROACH TO STATEWIDE TEACHER IN-SERVICE

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Changes which affect the quality of life are of particular importance to staff teaching in Consumer and Homemaking Education. The field demands not only revisions in content, but also in the delivery of the content to assure accessibility. In the spring of 1987 Consumer and Homemaking monies were used to fund a project which provided Vocational, Technical and Adult Education (VTAE) Consumer and Homemaking staff with an in-service using distance learning techniques. The purpose of the in service was to provide information on recent trends and research. Distance learning techniques rather than a face-to-face meeting were chosen as a cost effective measure.

The in-service program was divided into five half-day segments which were presented in each of the sixteen VTAE districts. The first day was an overview of the four topic areas to be pursued in greater depth at a later date. Participants met with a designated facilitator for registration and orientation followed by a video tape and corresponding fact sheet. The video included four, seven to ten minute segments, each representing topic areas to be addressed in future sessions.

After the video portion of the conference, small group discussions were used to generate questions which were addressed via satellite by a panel of content experts. The questions and answers were general in nature, as time was limited to one hour for all topic areas. The objective for this portion of the total in-service was to generate awareness of and interest in pursuing topics in greater depth in the future. The session ended with a wrap up by the facilitator in each district. This included a summary and evaluation of the day and pre-registration for the programs to follow.

Each of the next four sessions focused on one topic in the following format. Preceding the conference day, a packet of reference materials were sent directly to the participants and they were instructed to read the materials before the session in preparation for further discussion. Orientation and registration was first on the agenda with a group discussion following. Participants were encouraged to raise issues and questions which were then addressed via teleconference with a content specialist. This was a more focused conference and provided for indepth treatment of a topic. The day again concluded with a summary and evaluation. A synopsis of the evaluation results and some of the key factors we identified to create a successful program follows.

The evaluation consisted of a post meeting survey completed by the participants and facilitators. Included in the survey was information relating to:

1. Participant background
2. Physical characteristics of the room
3. Video and print materials
4. The satellite portion of the in-service
5. General satisfaction with the instructional format

A telephone survey was also conducted with participants three months after the in-service to assess how participants had used the knowledge and skills acquired in the in-service. In addition actual or potential in-class use of educational materials provided at the in-service was also assessed. A telephone conference with the facilitators was conducted to further evaluate their role in this educational process and the potential use of this in-service format in the future.

Using a combination of evaluation results and our experiences, we have compiled a list of key concepts to successful distance learning programming. A partial list follows:

1. Assess needs - identify objectives of participants, facilitators and resource persons and try to blend the goals of each group.

2. Communicate with participants, facilitators and resource persons - distance learning techniques may be new and need explanation.
   * Anticipate barriers and address them
   * Orient the "players" to their roles and create a sense of ownership.

3. Create an atmosphere - allow for networking and provide the "human touch".

4. Know the technical aspects of distance learning - providing a smoothly run experience will encourage positive thoughts about the process and product.

5. Evaluate the process and product - evaluation is an important tool in providing for the future success of distance learning programming.

The effectiveness of distance learning programming depends on human as well as technical factors. If both of these aspects are addressed, distance learning can become an efficient and effective alternative to traditional face-to-face in-service education.

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Teacher Training Via UAA's Rural Special Education Program

This presentation describes a federally funded Rural Special Education Grant awarded to the Special Education Program located at the University of Alaska, Anchorage. The project is designed to provide pre-service training in the area of special education to educators residing in rural and remote areas of Alaska. Although the State of Alaska can be considered unique, the service delivery system described here should be considered applicable for most rural and/or remote areas of the country.

Areas of Alaska, as well as other states (i.e. Nevada, Utah) can be considered remote as well as rural. The State of Alaska, for example covers a land mass of 587,500 square miles, making it larger than California, Montana and Texas, while its population only slightly exceeds 550,000. Alaska can be compared to such places as Nevada with a land mass of 110,540 square miles, population of 917,870, which gives an average of 83 people per square mile, and to the Navajo reservation with its large land mass and small population.

Most of Alaska's population resides in the Anchorage area, but there are 150 communities with populations of less than 5,000 people. Approximately 40% of all Alaskans are located in communities of less than 1000 people. Most of the rural communities are accessible only by light aircraft, as road systems to these areas are almost non-existent and distances between these villages are substantial.

The 55 local education agencies in Alaska serve approximately 6,415 children identified as learning disabled. Of this number, 1,925 students are native Alaskans and many more represent other minority groups. These students have special education needs compounded by bilingual and bi-cultural differences.

Since many educators reside in rural and/or remote areas as described above, there are limited opportunities for professional development due to limited access to universitites. The result of this isolation can be devastating to morale, competency, and job longevity. High attrition is a common phenomenon in rural and/or remote regions; personnel seldom remain longer than two years. Many elementary and secondary educators are not adequately trained in effective teaching techniques for the handicapped students who, because of P.L. 94-142 and least restrictive environment considerations, will no doubt be placed in their classrooms for at least a portion of their day.

The intent, then, of this project is to deliver university coursework related to meeting the special education needs of culturally different handicapped children and youth to off-campus graduate students who reside in rural and/or remote areas of Alaska. The target population includes graduate students currently

employed as teachers, who are preparing for advancement, promotion, career emphasis changes, or teaching mainstreamed handicapped students and due to geographical constraints are prevented from entering the traditional university on-campus setting.

The objectives of this project are many-fold and include two phases of development. Phase I consists of the development of approximately 8-10 core courses (introductory concepts, behavior management, task analysis, and individualization skills) and specialized coursework (theory, rural special education considerations, assessment, and intervention) for off campus delivery followed by practica/field experiences. Attainment of competencies is accomplished through:

a) video lecture/discussion;
b) audiovisual presentations;
c) texts and additional printed material;
d) resource speakers;
e) examination;
f) presentations of case studies;
g) simulation and role playing activities;
h) practicum experiences; and
i) course projects

Phase II of the project involves the delivery of coursework. This is to be accomplished primarily via the Learn/Alaska Telecommunication System. This network consists of three types of communication technology. These are used separately and in conjunction with each other and include:

a) audio-conferencing (speaker-telephone systems);
b) instructional television (video cassette and statewide satellite television channel); and,
c) computer service (to delivery instruction and serve as a "mail" exchange).

Courses have been delivered to rural sites for 3 semesters. During Fall 1987 semester, 5 courses will be offered to 24 different locations with a total estimated enrollment of 80 students. The benefits of this project are hoped to be realized in better services to all children, handicapped children being served in their home community, and teachers remaining in rural communities for longer time frames once they have been prepared to handle teaching in rural areas more effectively.

Needs assessments and evaluation tools have been utilized in conjunction with current research reports to help determine important issues to be incorporated into existing course content. Courses on and off campus are identical in content with each including issues related to serving the rural bilingual/ bicultural handicapped child. Instructors, grading procedures and course assignments are the same for both the urban and rural delivery. Only the delivery system separates the two components of UAA's special education program.

An important area to consider when determining and evaluating student learning, in addition to the typical consideration (i.e. tests, projects, course content etc.) is the issue of student support. Research has shown that the conventional on-campus student and the distance learner vary greatly. The on-campus learner finds oneself in an artifical and very support loaded environment, is often a student who has continued on with education immediately following high school, is a group learner, is face to face with instructor and other students, and receives immediate feedback. The distance learner, on the other hand, is often returning to school after years away, is in a home/work setting which is the "real" world environment, is an individual learner, often does not receive immediate feedback, has no group support and no benchmark to operate from and is typically an older student looking for course content that is relevant to their teaching situation.

Students learning at a distance need a support system built into the delivery model. Problems that typically arise can seem more intense when the learner is located many miles from university courses. The drop out rate among distance learners is typically higher than for the on-campus student. The research indicates a drop-out rate anywhere from 30-90%. Most often students site reasons other than course content for dropping out. The reasons are usually related to such issues as: overcommitment on the part of the student, family problems, lack of support to help determine the seriousness of the problems that arise, and materials/course not being organized to meet individual needs.

It is important to the success of any learning environment that student support issues be considered. The best course could be developed and if these other issues are not addressed student learning will not take place. When student support concerns are considered, along with the grading procedures, course assignments, content, and delivery style success can be measured based on student performance and child learning.

Third Annual Conference on Teaching at a Distance:
Evaluation of Teaching/Learning at a Distance

Sponsored by The University of Wisconsin-Madison
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"A Model for Distance Learning: Combining Computer Telecommunications, Pre-Produced Videotapes, On-Campus Instruction and Audio Teleconferencing"

Presented by:

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Video courses, combined with audio teleconferencing and computer telecommunications, can benefit adult learners who are far from campus or whose schedules make it difficult to attend traditional on-campus classes (3 hours per week for 16 weeks). These special courses help students to update their skills, to learn new concepts and techniques, to meet recertification requirements, or to satisfy hours towards a degree.

Video courses consist of professionally-produced videotapes, a course study guide, and texts. The study guide integrates all of the course components -- it details the reading assignments from the required texts, gives the viewing assignments, and/or exam information. The video component highlights the major themes of the course, demonstrates techniques and helps pace the student's work.

Instructor feedback occurs through comments and grades on written assignments transmitted on the electronic mail system/BBS. Students use a simple word processing program on the computer and then send assignments at 1200 baud to

the instructor's computer on campus. The computer communications system eliminates the long lag time of mail correspondence for essential interaction between the instructor and students.

In addition to the videotapes and computer communications system, students (individually or as a small group) call the teleconference bridge to have discussions with the instructor. The major benefit of the audio teleconferencing is consistent, simple, and inexpensive TWO-WAY communication between and among the learners and instructor. The audio teleconferences could be every two weeks or whatever schedule determined by the instructor.

Here is a summary of the format:

1. Students come to campus for all day sessions at the beginning and at the end of the semester. When they come to campus, each student receives a set of videotapes, study guide and texts, computer, software and printer.

2. Students watch and review videotapes at a time and place convenient to their needs. They complete weekly assignments on their computer and send or upload the text to the instructor's computer on campus. The instructor's computer would also serve as an electronic mail and bulletin board message system. The instructor's computer should have a toll-free phone connection.

3. Besides using the computer for word processing and electronic mail, the students could use it for other applications such as accessing information utilities (CompuServe, The Source, Genie) for software, database searching, topical forums, and special interest groups. (CompuServe's IQuest system has

more than 700 databases). In addition, the students could access free bulletin board systems near or far from their home to acquire free software and network with others who have similar interests.

4. On a schedule determined by the instructor (e.g. every two weeks), all students would call the teleconference bridge for a "meet-me" teleconference with the instructor and experts from around the country. The teleconference technology is important and necessary for INTERACTIVE instruction and discussion among students and the instructor. Teleconferences could be on Saturdays since bridge ports are readily available and toll-charges are much lower.

The format described above combines the media of video, audio conferencing, and computer telecommunications to deliver quality graduate and undergraduate instruction to adult learners who may be geographically isolated from the campus. Since adult learners typically have full-time jobs and family and community commitments, they prefer to earn academic credit in a convenient format with few obstacles. Such obstacles, among others, include traveling long distances to campus; lack of time due to job, family, and community commitments; and inclement weather. The combined media format overcomes these obstacles because it saves the student's time, offers convenience, and provides the opportunity to study independently or in small groups.